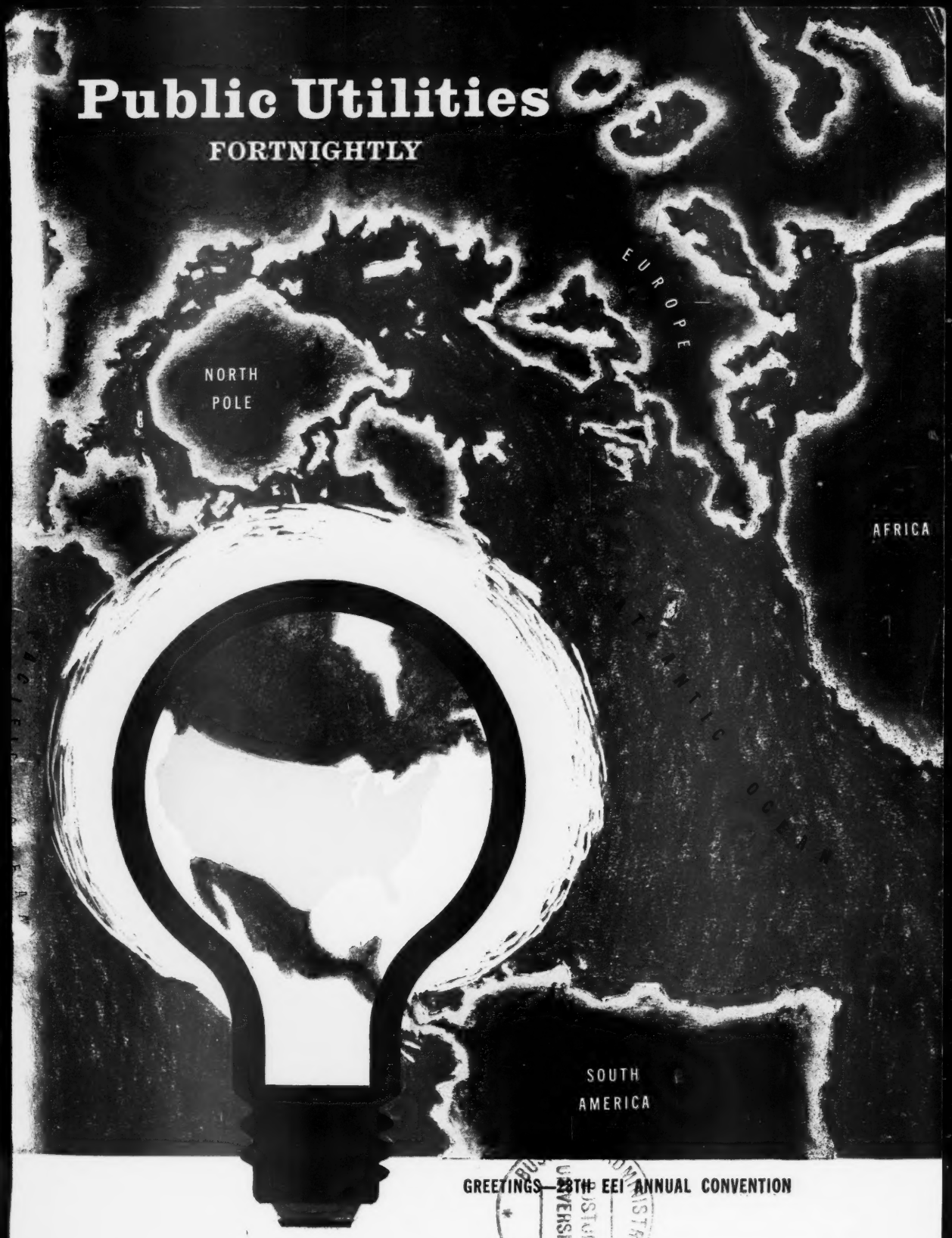
Public Utilities

FORTNIGHTLY



GREETINGS—28TH EEI ANNUAL CONVENTION

LEADING THE WORLD IN ELECTRIC POWER—
THE AMERICAN WAY

JUNE 9, 1960

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INDIAN POINT

Indian Point Station as it looked in April this year, showing some of the piping to be installed by Kellogg's Power Piping Division

NUCLEAR POWER PIPING BY KELLOGG

Construction progress at Consolidated Edison Company's Indian Point Station demonstrates how Kellogg's broad erection experience can take tomorrow's newest and toughest power piping requirements in stride.

At this unique 275 Mw nuclear steam electric generating station, Kellogg has a contract to manufacture, deliver, and to erect all stainless and carbon steel nuclear piping for the inside of the reactor sphere, and all power piping for the conventional portion of this plant. Kellogg also stress-analyzed the major portion of this piping. Much of the stainless piping will be manufactured in Kellogg's Williamsport plant.

The particularly rigid specifications of high quality and close tolerances required the assignment of a special engineering staff to the site. This staff plans, coordinates and supervises each step of Kellogg's erection assignment. One important phase entails over 2200 critical welds, most utilizing Kellogg's K-Weld technique. Another is the radiographic inspection of each weld, which Kellogg is undertaking with its own equipment and personnel.

Kellogg welcomes inquiries for its stress analysis, metallurgical, engineering, manufacturing and erection services.

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Public Utilities FORTNIGHTLY

VOLUME 65 JUNE 9, 1960 NUMBER 12

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An exclusive message to the electric utility industry.

Do Low Electric Rates Increase Net Earnings? . . . . . *C. S. Reed* 798
Rate cutting and its effect on net revenue and the per cent earned on the money invested.

Toward Greater Freedom . . . *Hon. David A. Hamil* 815
The author finds much work to be done in the field of public relations activities by the co-ops.

How Soon Electric Heating? . . . . . *G. T. Kellogg* 820
The electric industry generally welcomes any system that will do an efficient job of space heating.

Regulatory Treatment of Accelerated Depreciation . . . . . *Harry A. Poth, Jr.* 830
Tax deferrals arising from use of accelerated depreciation still very much of a problem for the electric industry.

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Exclusive statements by more than sixty electric company executives. Compiled by Francis X. Welch, editor.

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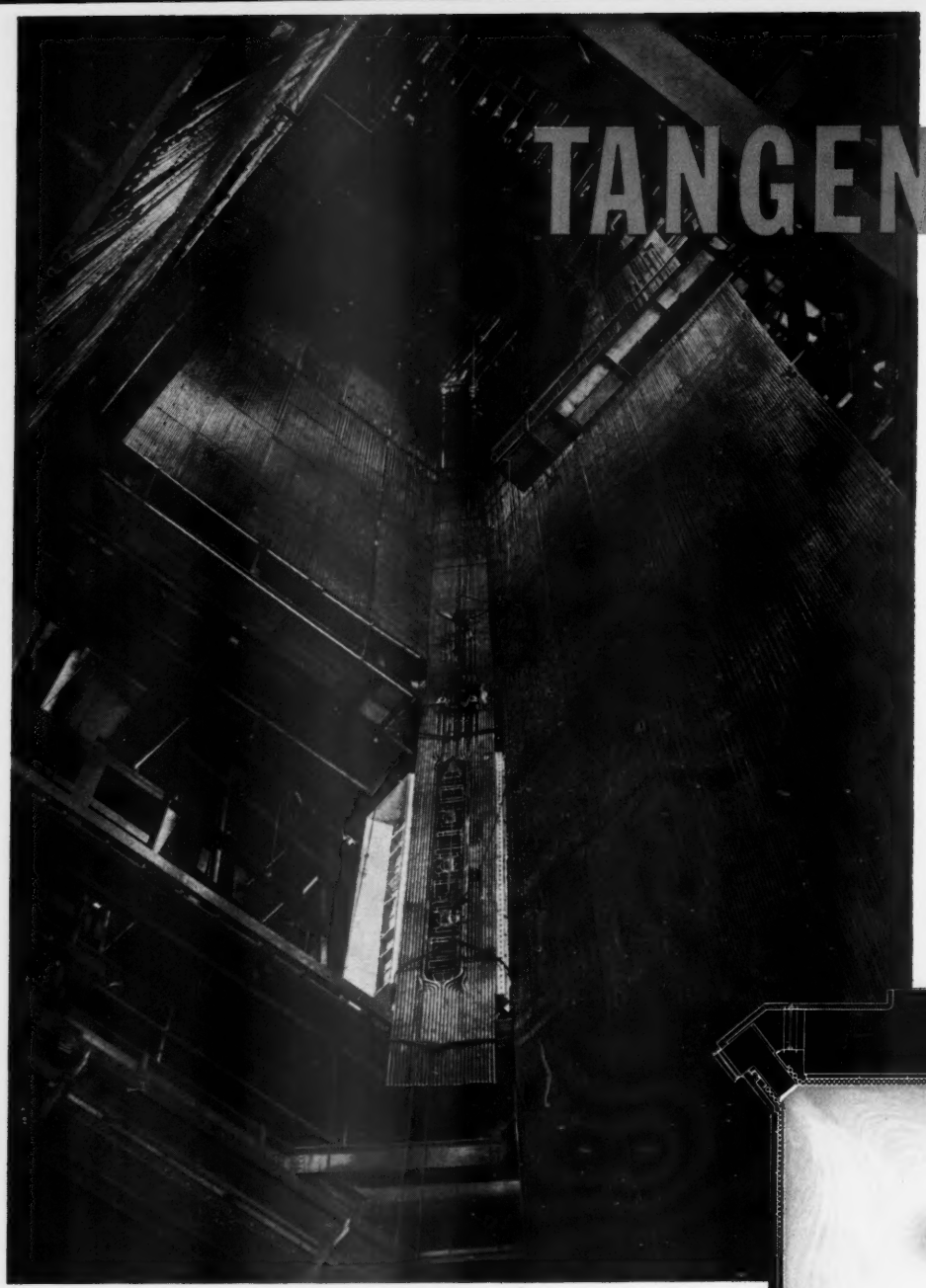
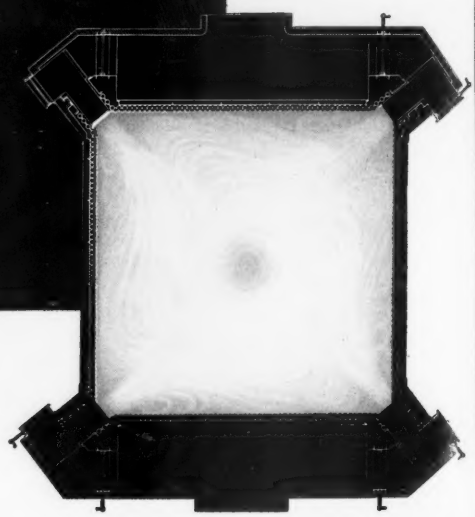
TANGENTIAL F



Looking up into the furnace of a C-E Controlled Circulation Boiler. One of its four Tilting, Tangential Burners is being moved into position. The burner and its adjacent water wall tubes are shop assembled into a single panel and handled as one piece. All four corners of the furnace are similarly equipped. Tangential burners may be arranged to burn coal, oil or gas separately or in combination.

Sectional plan view through tangentially fired furnace showing impinging action of fuel streams from the burners which results in extreme turbulence and thorough mixing of fuel and air.



COMBUSTION E

Combustion Engineering Building

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; NUCLEAR REACTORS;

...FIRING...

...best for big boilers

Tangential firing – an exclusive C-E development–was introduced by Combustion in 1927. The tilting feature of the burner nozzles, for control of superheat temperatures, was added to the basic design in the late thirties. Among the many proven advantages of the C-E Tilting, Tangential Burner, those enumerated below are especially noteworthy – whether the fuel be coal, oil or gas, or combinations thereof.

Combustion is better

1. The extreme turbulence created by impinging flame streams of adjacent burners assures the most effective mixing of all the air with all of the fuel to produce the most rapid and complete combustion. Minimum carbon loss is assured.
2. The swirling rotating travel of combustion gases fills the furnace cross-section and utilizes the heat absorbing wall surfaces most effectively.

Superheat is controlled

1. If steam temperature goes too high, the C-E Tilting Tangential Burner nozzles automatically tilt downward. More furnace wall surface becomes effective. Gas temperature to superheat surface is lowered. Steam temperature comes down.
2. Conversely, if steam temperature drops below that efficient for the turbine, nozzles tilt upward, sending hotter gases to the superheater. Steam temperature goes up – automatically.

Acceptance is widespread

About 650 tangentially fired C-E Boilers with an aggregate capacity of about 400-million pounds of steam per hour are now in service; another 85 units are under construction or on order. In 1959 alone 31 new C-E Boilers with an aggregate capacity of over 5-million kilowatts were put in operation in electric utility plants. All of these units are tangentially fired.

Thus, tangential firing has established itself in service over a period of many years as the most widely accepted method of firing for big boilers. More recently it has met similar success in smaller oil and gas fired units for capacities as low as 70,000 lbs. of steam per hour. Catalog PC 8 gives full information. May we send you a copy?

...ENGINEERING

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C-E

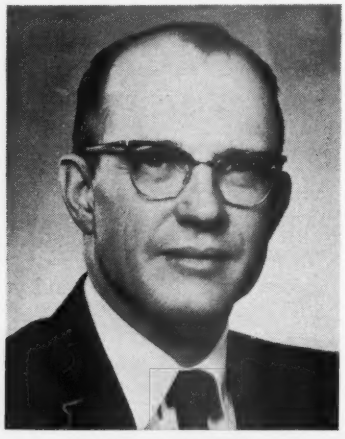
C-263

...PAPER MILL EQUIPMENT; PULVERIZERS; FLASH DRYING SYSTEMS; PRESSURE VESSELS; SOIL PIPE

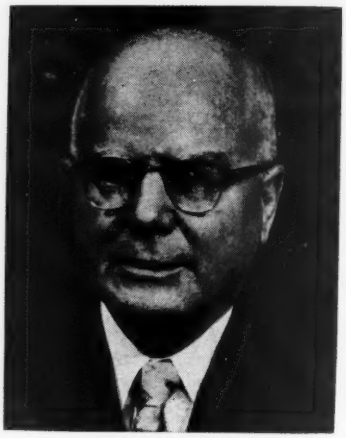
Pages with the Editors

PRESIDENT ALLEN S. KING has taken a very practical view of the responsibility of the electric utility industry in his advance statements concerning the need of leading the world in electric power in the American way. This was selected as the theme of the Edison Electric Institute's twenty-eighth annual convention at Atlantic City, New Jersey, June 6th to 8th. In view of the increasing international tensions, nothing could be more timely than to concentrate the attention of a great essential industry on the job of leading the way on a world-wide comparative basis.

MR. KING, who is not only president this year of the Edison Electric Institute, but also president of the Northern States Power Company, has given PUBLIC UTILITIES FORTNIGHTLY an exclusive statement on this pressing responsibility of the electric utility industry. It appears as the leading article in this issue under the title of "Meeting Tomorrow's Power Needs." Today the electric utility industry enters a new decade, the sixties, and already clouds of international crisis dot the horizon of our nation's future. The electric utility industry now is planning and building to meet the requirements not only of the sixties but the seventies and the eighties, and so on.



DAVID A. HAMIL



ALLEN S. KING

As MR. KING tells the story, our American electric utility industry is confident of its ability to lead the world in electric power in the future as it has in the past continuously for many years That, perhaps, is why we can call it the American way because for so long there has been no other way. America must lead in electric power or our leadership in other fields would soon be in default.

MR. KING is too well known to the readers of these pages to warrant a detailed biographical review. He is a graduate of the Massachusetts Institute of Technology (EE, '22). He joined Northern States Power Company that same year—first in Minneapolis, then in Fargo, North Dakota. For more than twenty years he was division manager in North Dakota. In 1945 he became state supervisor. He was elected executive vice president in 1951 and president of the company in 1954.

* * * *

C. S. REED, vice president of the Duke Power Company, is author of the article analyzing the impact of low rates on earnings as reflected in TVA rate policies, beginning on page 798. MR. REED is a native of Pittsburgh and a graduate of the University of Pittsburgh.

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He served fifteen years with the Cities Service Company as a consulting rate engineer. He was also a rate consultant for most of the southeastern electric companies at the time when TVA was started. He took a permanent position with the Duke Power Company in Charlotte in 1934. He was made vice president in 1950. He retired as rate engineer last year but continues as his company's rate consultant.

* * * *

DAVID A. HAMIL, whose article on the Rural Electrification Administration's silver anniversary begins on page 815, was appointed by President Eisenhower to be the sixth Administrator of REA four years ago. Prior to that he was engaged in the cattle feed business in Colorado, as well as in political activity. At the time of his appointment he was speaker of the Colorado house of representatives. ADMINISTRATOR HAMIL is a graduate of Hastings College in Nebraska (BA, '30) and once organized an REA electric co-op at Holyoke, Colorado.

* * * *

A PROFESSIONAL writer and public relations man, G. T. KELLOGG, whose article on electric heating begins on page 820, is a resident of Arlington, Virginia. He came to Washington, D. C., in 1930 as a reporter with the *Evening Star*. Prior to that he attended Sioux Falls College in South Dakota, where he first went into newspaper work. He has been a Washington correspondent for trade magazines in several fields, and has edited a group of northern Virginia weeklies. He is also a member of the staff of the Air-Conditioning and Refrigeration Institute, trade association of that industry.

© Harris & Ewing
G. T. KELLOGG

HARRY A. POTH, JR.

* * * *

HARRY A. POTH, JR., whose comprehensive analysis of the complex subject of regulatory treatment of accelerated depreciation begins on page 830, is a partner in the well-known firm of utility law specialists, Reid & Priest, of New York and Washington, D. C. A native of Philadelphia, MR. POTH was educated in that city at the Notre Dame Convent school, the Wharton School of Finance of the University of Pennsylvania (BS, '33), and at the University of Pennsylvania Law School (LLB, '36). He joined the New York office of Reid & Priest in 1937 and in 1948 was made partner in charge of the firm's Washington office. He is now a resident of Greenwich, Connecticut. During World War II, he saw military service with the Air Force, separating with the rank of Major. He has been especially active in the Federal Power Commission Bar Association and the American Bar Association.

THE next number of this magazine will be out June 23rd.

The Editors

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Coming IN THE NEXT ISSUE

(June 23, 1960, issue)

★

ECONOMIC COST OF MONEY CAPITAL

Public utility management, as well as regulators, are concerned with the cost of money capital but for different reasons. Business management is concerned with such cost as it influences the efficient use of funds and affects financing decisions. Regulators are concerned with the fixing of rates which would enable public utilities to earn the most cost of capital. For some years Robert M. Soldofsky, associate professor of finance at the State University of Iowa, has been teaching the discount process as a method of arriving at the time-adjusted or economic cost of money capital. Not only is it an effective method of arriving at accurate results, but it also makes allowance for growth in future earnings. The author has sought to avoid the misleading effects of direct comparisons of equity capital for utilities and nonregulated industrials.

WHY WE TAKE UTILITY SERVICE FOR GRANTED

Citizens of the United States take for granted the most important element of their lives, including individual and religious liberty, food, clothing, shelter, and public utility service. But because utility services do not physically appear on our tables or on our backs every day, we tend to overlook them. That is perfectly all right as long as we understand the relative importance. Roger B. Corbett, president of the New Mexico State University, Las Cruces, has given us a splendid inspirational account of what electric and other utility services mean or should mean to the average citizen of America. He compares our standards with the greater part of the rest of the world which is so much less fortunate in these respects.

THE SCOPE AND PHILOSOPHY OF REGULATORY COMMISSIONS

Alan S. Boyd has a background in regulation at both the federal and state levels. For nearly ten years he was a member of the Florida Railroad and Public Utilities Commission. During the past year he was nominated to the Civil Aeronautics Board to succeed his friend, Louis J. Hector—an outspoken critic of some aspects of commission regulation. Recognizing the need of adjustments to reflect changing times, Commissioner Boyd nevertheless feels that drastic surgery as a means of curing regulatory shortcomings within our federal and state commissions could do more harm than good. His article considers such problems as "expertise," regulatory lag, relations between commissioners and their staffs, separation and delegation of powers, and arrives at the conclusion that while self-improvement is indicated, commission regulation per se is here to stay as well it should.

★

Also . . . ***Special financial news, digests, and interpretations of court and commission decisions, general news happenings, reviews, Washington gossip, and other features of interest to public utility regulators, companies, executives, financial experts, employees, investors, and others.***

Hagan PowrMag Analog Computer Control

simple as

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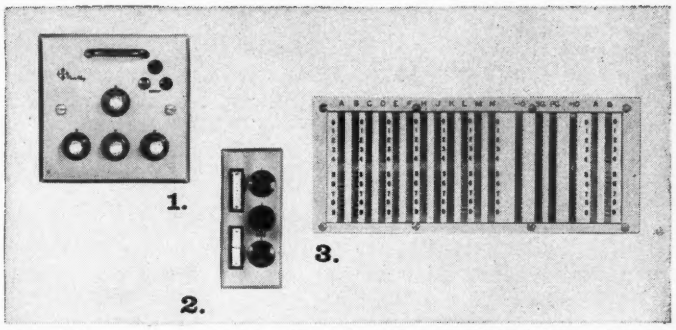

PowrMag systems embody the highest degree of flexibility. Simple, efficient electrical design utilizing long-lived and trouble-free solid state components, and rugged mechanical construction suit the system for a variety of industrial process control applications.

1. *Magnetic Control Unit*

This magnetic amplifier, operating on 1-9v DC, may be used individually, as a single 2 or 3 mode controller, or as one element in a large system. Each control unit may be removed from the front of the panel for easy interchangeability. The basic unit is easily converted to other modes by the addition of interchangeable, plug-in circuits for *all* common control operations. Inventory is reduced to the one basic unit. Unaffected by shock or vibration, PowrMag has no moisture, dirt, leakage or freezeup problems—3.5 watts of unregulated 110v, 60 cycle AC. Size—5¼″ x 5¼″.

2. *Remote Control Station*

These stations provide for remotely established set points and required manual control operations. Full station may contain two single or ganged potentiometers, one switch and two meters. Size—2¼″ x 5¼″. Half stations available with set point, bias or ratio dial and output signal indicator. Size—2¼″ x 3⅛″. Each station uses 12-wire, color-coded electric cable with MS-type connector. Front mounting and removal make it ideal for the compact console installations required for centralized control.

3. *Patchboard*

Interconnecting the system in any desired manner, via color-coded electrical cable, the patchboard requires no solder connections or terminal boards—all connections are made by special taper pins. Each connection is identified by an alphanumeric combination. Numbers, run vertically, identify the components in the system, such as magnetic amplifiers, controllers, transducers, etc. Letters, run horizontally, identify the connectors leading into the patchboard. DC control power bus is in the center section—no AC voltages are used in the patchboard.

Easy front access permits simple changing of operations. Additional loops or components are readily added to the system.

A letter or phone call will bring you complete information on the PowrMag system. **Ask for Bulletin MSP-163.**

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Remarkable Remarks

"There never was in the world two opinions alike."
—MONTAIGNE

JAMES ROSCOE DRUMMOND
Chief, Washington news bureau, Christian Science Monitor.

"On many of our critical issues of the day there has been entirely too much public speaking and not nearly enough private thinking."

MAURICE H. STANS
Director, Bureau of the Budget.

"In the absence of a genuine thaw in the cold war which could lead to a major reduction in military costs, the only way to cut back the level of the budget is to look to the Congress to modify laws that are already on the books."

EDITORIAL STATEMENT
The New York Times.

"A layman might suspect that what the government needs is a simplified structure of responsibility and command. Who does the original thinking when everybody is either being co-ordinated or is co-ordinating somebody else? The government is overweight, perhaps not so much with squandered money as with overlapping agencies."

HERBERT D. VOGEL
Chairman of the board, Tennessee Valley Authority.

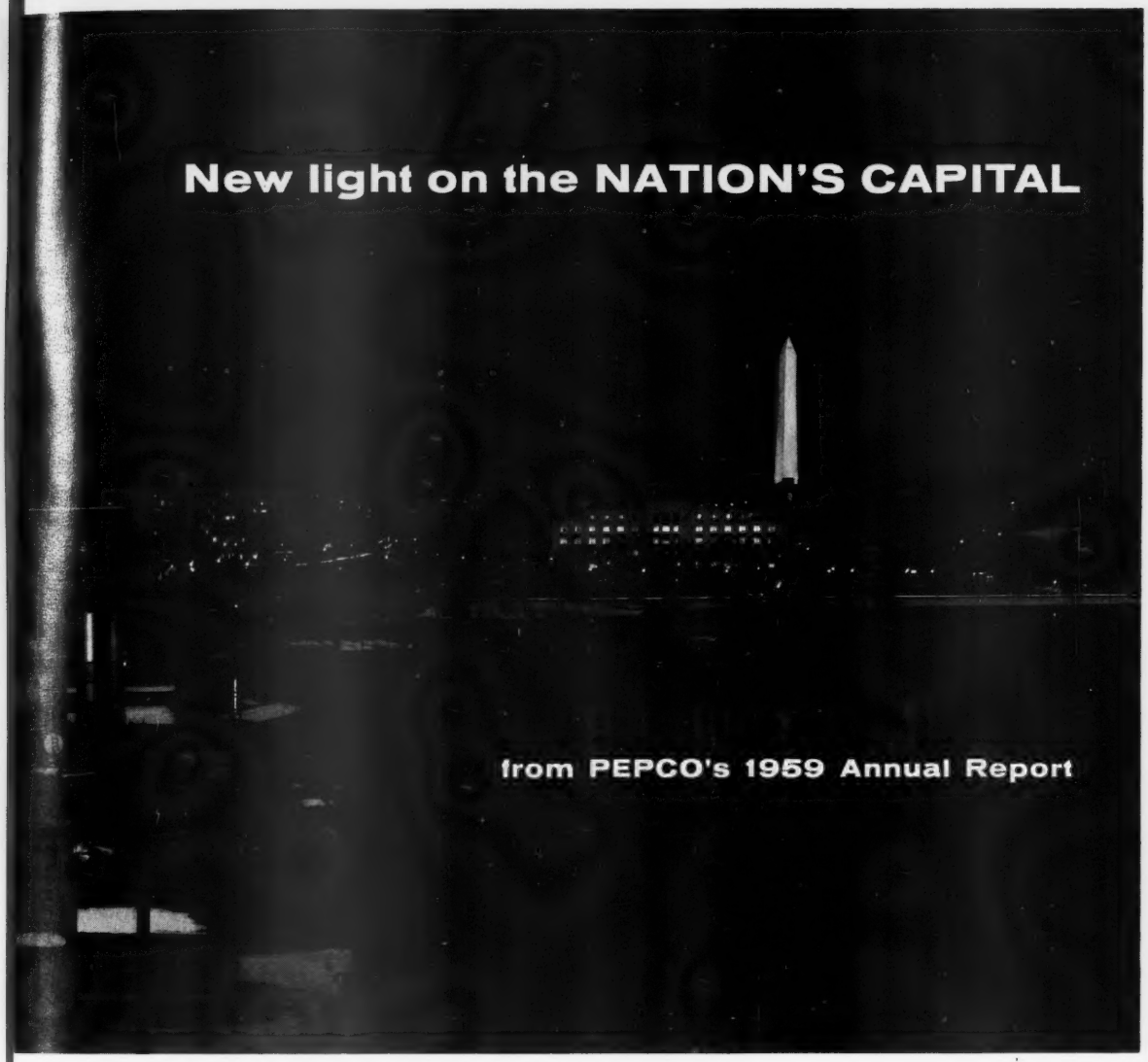
"I cannot ignore the very real advantages accruing to any system which operates for minimum earnings rather than a normal profit and which is not required by law to pay interest on its obligations or income taxes to the federal government. In all fairness, it must be admitted that these result in consumer advantages not enjoyed by the customers of private power companies. Any talk about establishing a measure for the cost of power without reference to these factors is, of course, absurd."

CLIFTON L. GANUS, JR.
Vice president and dean, School of American Studies, Harding College.

"The secret of American achievement is a fundamental belief in God, constitutional government, and the American free enterprise system. Upon these three principles are based the civil and economic liberties by which we live. By which we have achieved the greatest measure of personal freedom and economic well-being that the world has ever known. I challenge you to protect this pyramid of freedom and to assure your generation, and that which is to come, of the rights and privileges which we enjoy and for which our forefathers died."

JOHN P. SAYLOR
U. S. Representative from Pennsylvania.

"Two or three decades back, who would have dared suggest that the federal government had any utility responsibility to supply electric power for anyone? Two decades ago who would have suggested that the federal government appropriate funds for aid to local education? Anyone even mentioning such things would have been branded a Socialist right off the bat. Now such ideas are bandied around without apologies. So it is with other things—our acceptance of farm subsidies, high taxes, and more and more interference by the government in our daily lives. These all form a pattern which will not only destroy your particular business but will destroy our free enterprise system as well. We have developed enough of the picture to know that the situation is deadly serious."



PEAK LOAD	up 12% to 1,156,000 kilowatts
SALES	up 13% to 4,367,000,000 kilowatt-hours
CUSTOMERS	up 2% to 350,000
REVENUE	up 15% to $83,215,000
EARNINGS PER COMMON SHARE	up 14% to $1.79
GROSS PROPERTY AND PLANT	up 14% to $434,916,000
TOTAL CAPITALIZATION	up 16% to $371,110,000

excerpted from the 1959 Annual Report

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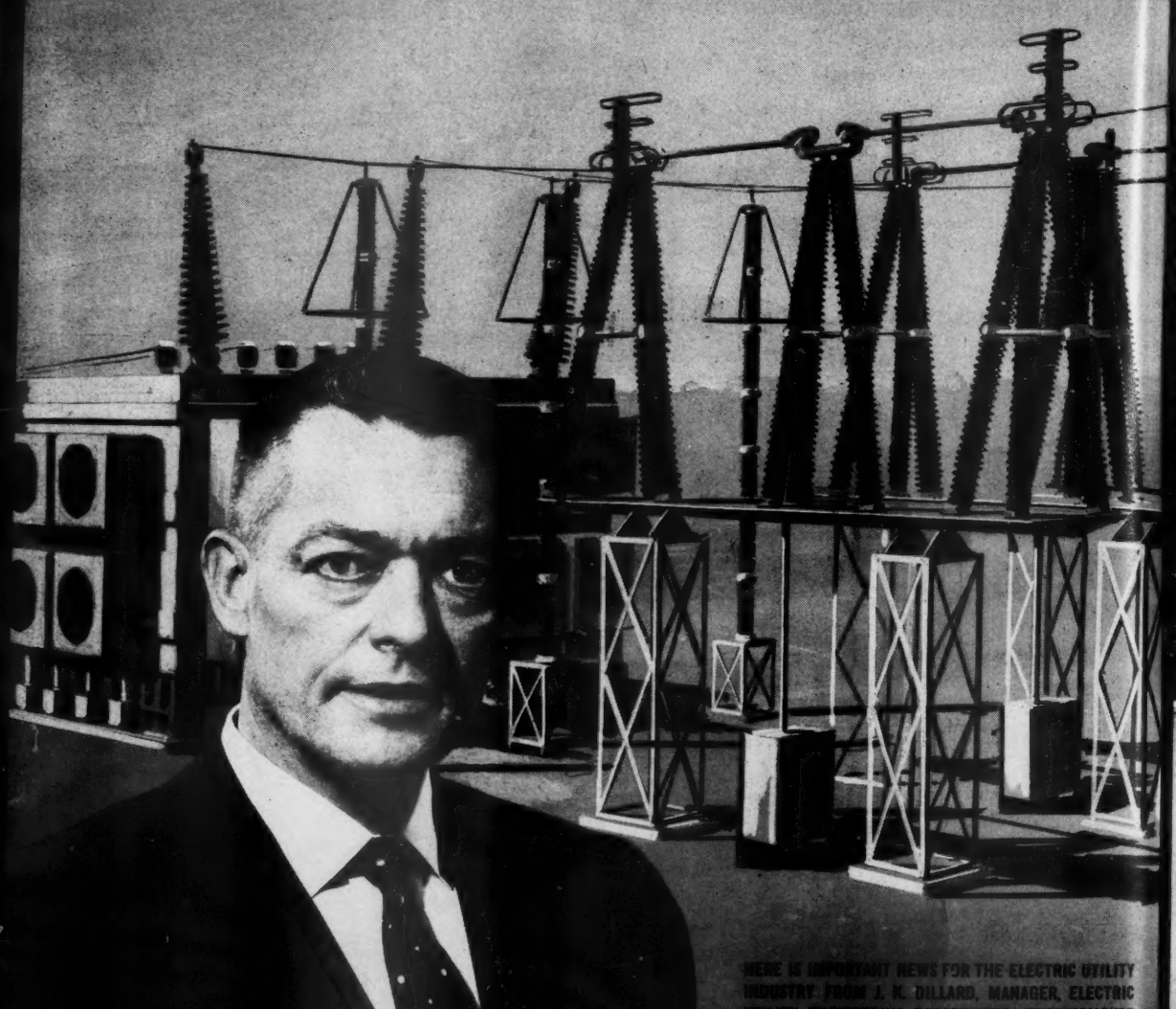
Washington, D. C.



HERE IS IMPORTANT NEWS FOR THE ELECTRIC UTILITY INDUSTRY FROM J. K. DILLARD, MANAGER, ELECTRIC UTILITY ENGINEERING DEPARTMENT, WESTINGHOUSE ELECTRIC CORPORATION

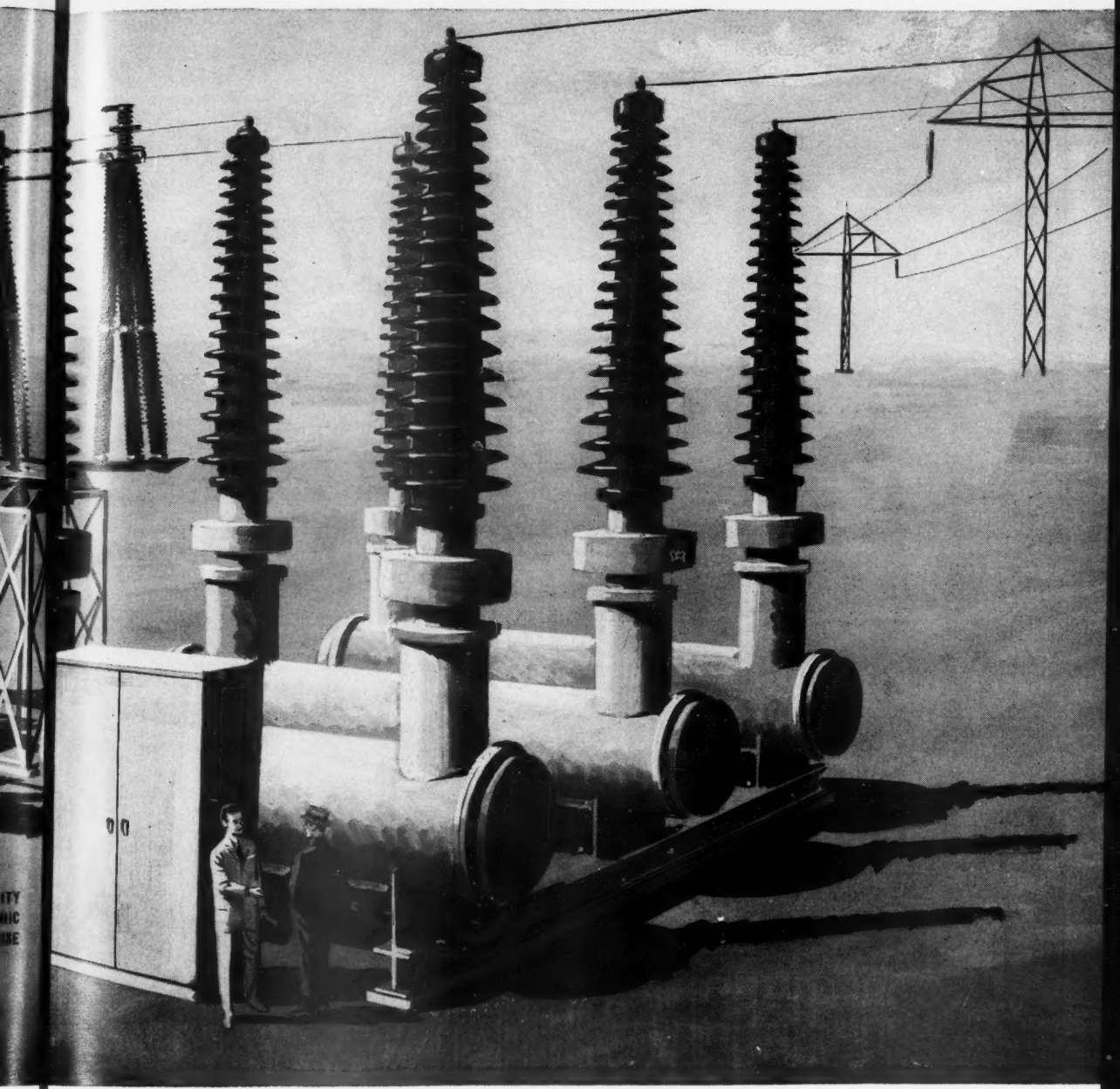
"Westinghouse can bring you equipment for 690-kv transmission systems—today!"

In the next seven years enough generating capacity will be added to our electric utility systems to power another America. To distribute this power economically—to distribute it at all—will require super-voltage systems. For 460-kv to 690-kv systems, Westinghouse is ready today to furnish equipment to do the job.

Ability to supply this equipment is completely dependent upon basic understanding of system behavior at such voltages. This knowledge has been acquired by exhaustive tests conducted in cooperation with the electric utility industry.

Building blocks of today's E-H-V knowledge... Tidd project and high-altitude tests at Leadville

Westinghouse gained early E-H-V experience in 1947 by building transformers for the American Electric Power System's field tests at Tidd Station. All operating conditions that could reasonably be expected were simulated, including surge voltages up to



2250 kv. Based on this experience, 345-kv apparatus . . . power circuit breakers, transformers, arresters, disconnect switches . . . is in successful commercial operation on hundreds of miles of 345-kv circuits.

An advanced laboratory in the Rockies

In 1956, in cooperation with Public Service Company of Colorado, Westinghouse began participating in a broad investigation of E-H-V transmission in the Rocky Mountains. This project includes measurement of corona and radio influence and exhaustive switching surge experiments. Conductor size and bundling effects, reduced insulation levels and economics of super-voltages are being studied as a further extension of Tidd tests at 10,000-ft altitudes under violent extremes of weather and temperature changes.

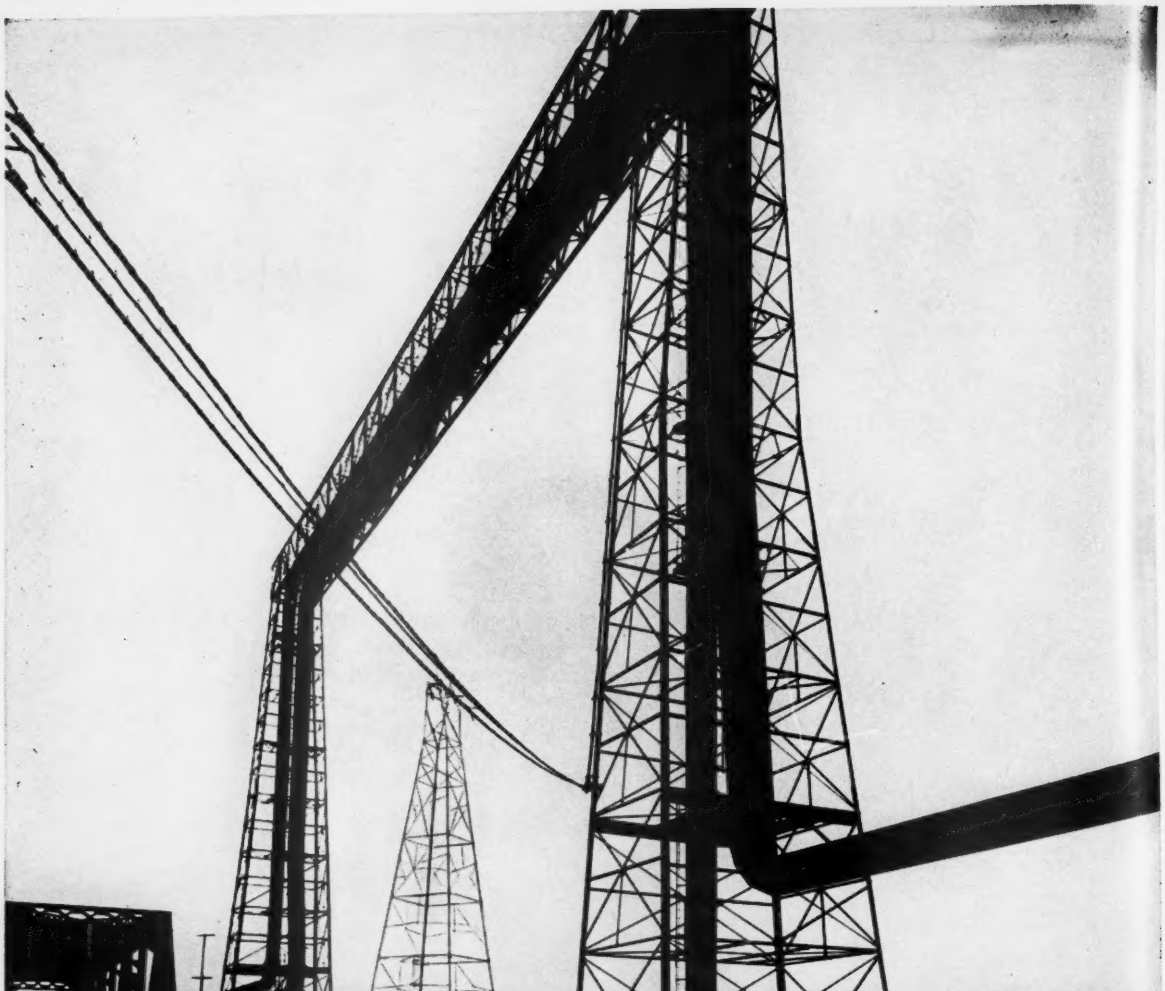
Spending millions to save utilities tens of millions

Building upon this field experience, and many successful commercial applications at 345 kv, apparatus has been further developed at modern test centers throughout Westinghouse—complete high-voltage, high-power test facilities allowing the development of equipment for 690-kv systems.

Because of the Westinghouse policy of plowing back earnings into the future of the electric utility industry, the challenge of 690-kv transmission systems has been met! J-97211-R

YOU CAN BE SURE...IF IT'S **Westinghouse**

TUNE IN WESTINGHOUSE CBS TV-RADIO COVERAGE, PRESIDENTIAL CONVENTIONS, JULY 10-29



ENERGY EXCHANGE PROVIDES TWO-WAY ECONOMY

In their never-ending search for new ways to provide more power and to reduce costs, Detroit Edison engineers have developed an ingenious system for feeding low pressure steam to a neighboring industrial plant. In turn the neighbor supplies blast furnace gas to Edison for the production of more electric power. A unique "energy bridge" carries the service lines across the Rouge River in an economical manner.

This is typical of how Detroit Edison is constantly exploring and utilizing new opportunities to improve efficiency in its service to the industries, stores, farms and homes of Southeastern Michigan.

DETROIT EDISON

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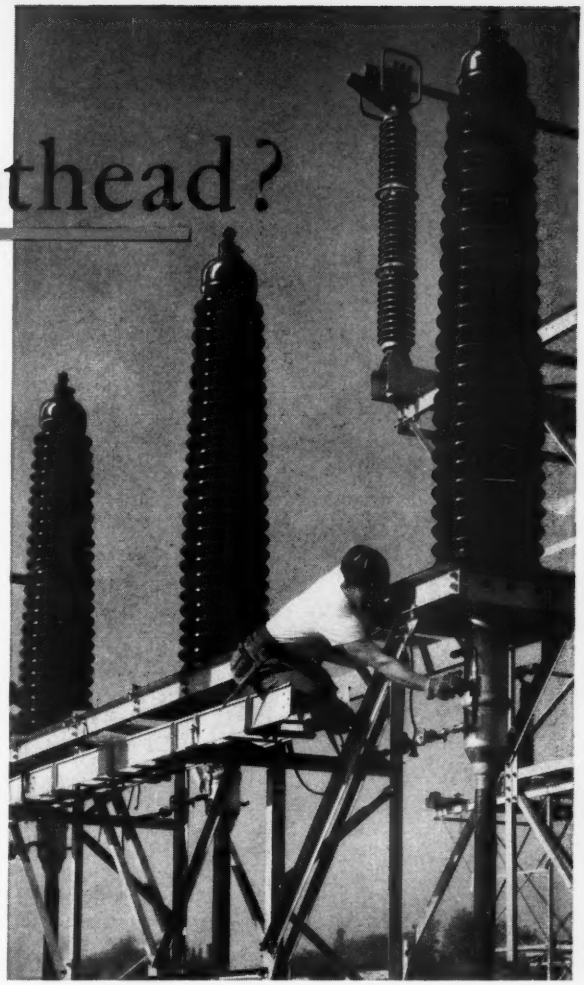
What Is A Pothead?



Terminating a metallic sheathed or shielded cable creates an abrupt discontinuity in electrical characteristics of the cable. Electrostatic stresses that have been resolved by optimum balance of dielectric components within run of the cable itself are disturbed at a cable end when sheath and/or shielding are stripped away from the conductor insulation.

Rubber and plastic insulations exposed to the elements are subject to deterioration caused by sun, rain, industrial fumes, salt spray, and the like. Oil-impregnated paper insulation absorbs moisture readily, and if exposed to the atmosphere would soon cease to be an insulator. Creepage distance along the surface of insulation from bare conductor to ground becomes significant and can result in tracking and eventual flashover.

All these conditions are overcome by a pothead to the degree required by system design and BIL level desired. A pothead provides:

1. An hermetic seal of the cable end to prevent contamination of cable insulation by moisture or liquid dielectrics used in equipment to which the cables are connected.

2. An impervious porcelain insulator to protect cable insulation against weather and adverse contaminating atmospheric conditions.

3. Physical protection and mechanical support of the cable conductors, insulation sheath, armor, and so forth.

4. Means for making external electric connections with the cable conductors within the pothead housing.

5. A compact, economical housing providing adequate dielectric strength (including that of the cable end) considerably greater than can be accomplished by any other means within the same space.

Unlike a bushing, where characteristics are controlled by complete factory assembly and test of the whole device, the pothead manufacturer can provide in finished form only a portion of the whole termination. With a pothead termination, the cable, stress-relief cone, and dielectric compound must be assembled with the basic pothead in the field at time of installation. Successful operation of the termination requires proper combination of all these components.

Years of development work and of operating experience have resulted in a thorough understanding by G&W engineers of electrical and mechanical requirements for pothead terminations. From this has evolved the most complete line of pre-engineered standard potheads with improved gasket materials, superior porcelain designs, hermetically-tight metal-to-porcelain bonds, and an array of interchangeable pothead entrance fittings.

G&W knowledge of pothead-design fundamentals, use of materials of the highest grade, flexibility of component parts, and good installation techniques will help you make better cable terminations for more reliable transmission of electric power with underground cables.

G&W representatives welcome the opportunity to consult with you on your present and future cable-termination requirements. G&W's unique engineering service is available without obligation.

G&W ELECTRIC SPECIALTY COMPANY
3526 WEST 127th STREET • BLUE ISLAND, ILLINOIS
CANADIAN MFG. • POWERLITE DEVICES LTD. • TORONTO, MONTREAL & VANCOUVER

superior quality standards — inspired specialized design

A 60-1

Do you have a Utility

problem?

America is growing.

Our population is not only increasing in numbers, it's spreading. Industry is expanding to meet challenging new opportunities.

And Utilities are faced with enormous capital expansion to provide for the growing needs of industry and consumers.

This is where the Irving can be of particular help—by assisting Utilities in making the many financial decisions incidental to growth.

Our Analytical Studies, Seminars and Round Table Conferences have helped many Utilities bring added vitality to their capital planning, financing and cultivation of the financial community.

For information, you are cordially invited to call our Public Utility Department at DIgby 4-3500 or write us at One Wall Street.

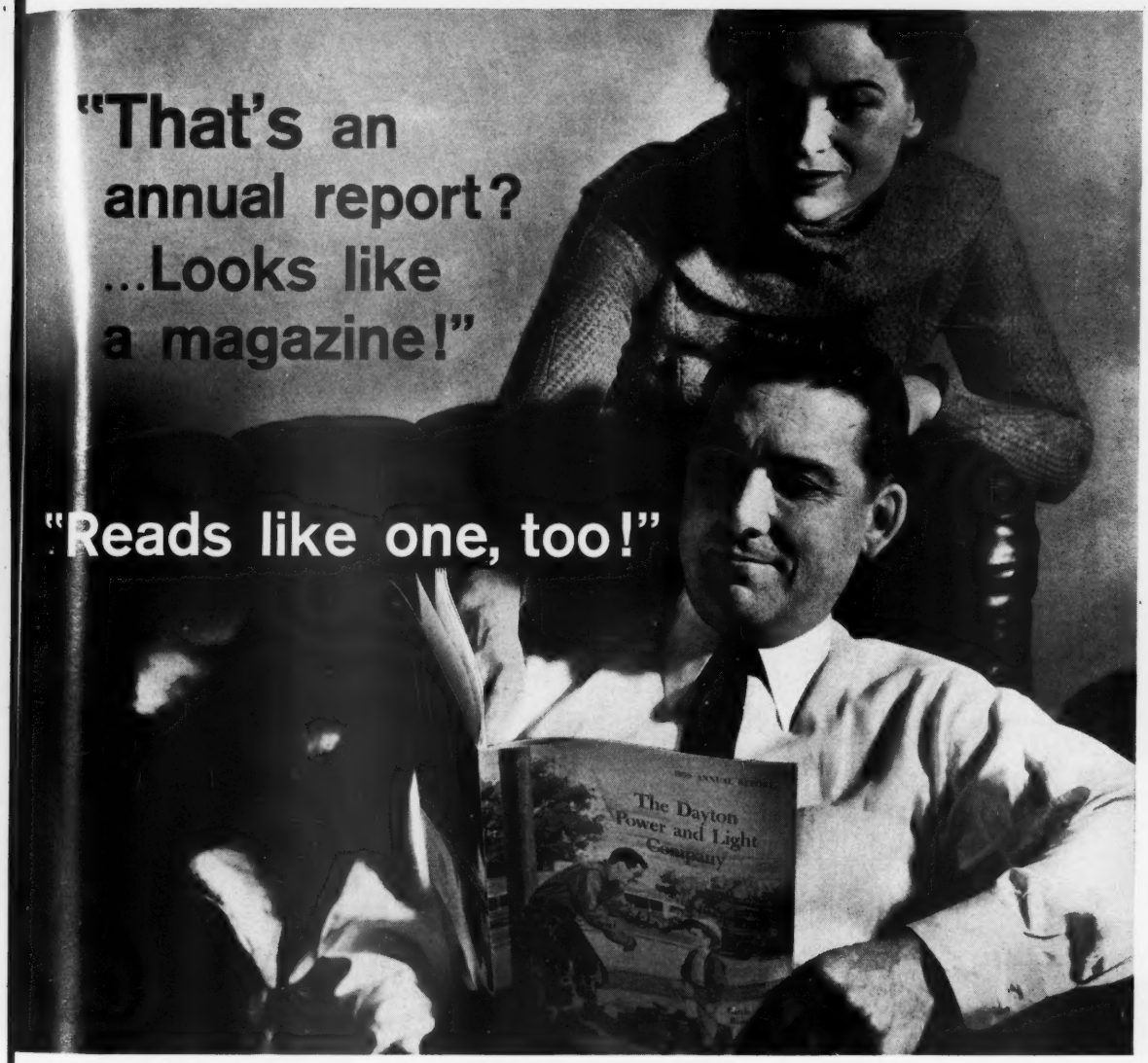
IRVING TRUST COMPANY

Capital Funds over $140,000,000 ***One Wall Street, New York 15, N.Y.*** *Total Assets over $1,700,000,000*

GEORGE A. MURPHY, *Chairman of the Board* WILLIAM E. PETERSEN, *President*

Public Utilities Department—JOHN F. CHILDS, *Vice President in Charge*

MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION



DP&L reports on an interesting year

The Dayton Power and Light Company's report on 1959 includes such topics as: "The Battle Against Rising Costs"; "2 Billion Tablespoonfuls of Coal" (a story of efficiency); "The Browns Have $500 to Spend"; "Going Underground to Reduce Overhead"; "Electromation" —and more. It's the story of serving a million people in prosperous West-Central Ohio with electricity and natural gas. The coupon will bring your copy.

AREA SERVED IN OHIO

THE DAYTON POWER AND LIGHT COMPANY · LIGHT · HEAT · POWER · The Symbol of Service

THE DAYTON POWER AND LIGHT CO. P
25 North Main, Dayton 1, Ohio

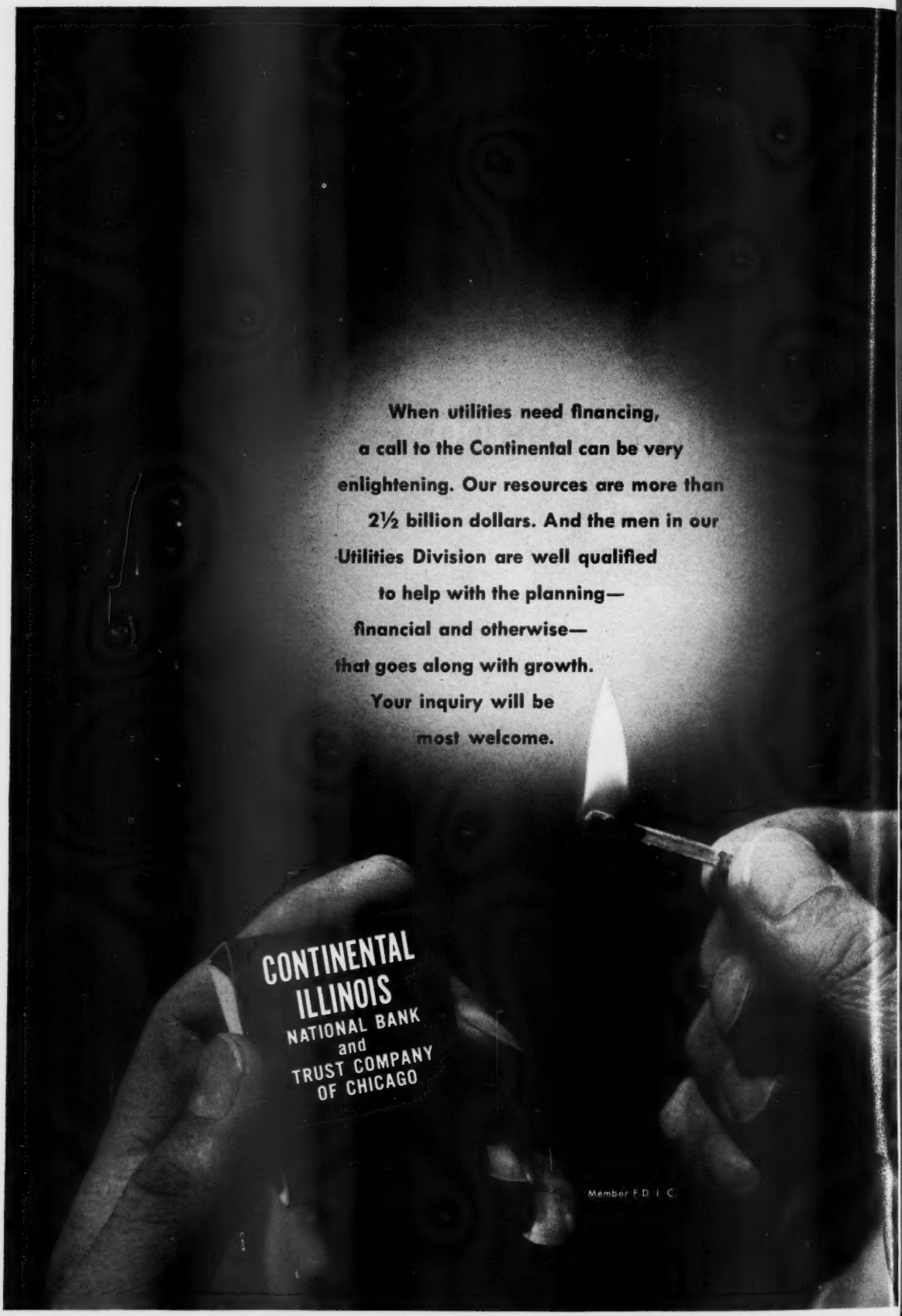
Please send me a free copy of DP&L's 1959 Annual Report.

NAME_____

STREET_____

CITY_____ ZONE_____ STATE_____

1960


When utilities need financing,
a call to the Continental can be very
enlightening. Our resources are more than
2½ billion dollars. And the men in our
Utilities Division are well qualified
to help with the planning—
financial and otherwise—
that goes along with growth.
Your inquiry will be
most welcome.
CONTINENTAL
ILLINOIS
NATIONAL BANK
and
TRUST COMPANY
OF CHICAGO
Member F.D.I.C.

THE POWER TO GROW

BUILDING BIG MEANS MONEY

The men who make the management decisions of America's electric utilities know that their individual companies and their industry are up against the challenge of the most dramatic need for system expansion and new construction we have ever seen. The population and economic growth projected for the next decade are the measure of the challenge.

Building big means money. Where is the money coming from? Competition in capital markets is keen and growing keener. Regulatory commissions—however conscious of the need for earnings adequate to attract new capital—must, in the nature of the case, stand as a check to rate increases. Earnings must continue to be under the pressure of higher wage costs. Where do we look for earnings in our industry that will draw in the capital amounts the next decade will demand?

We look surely, where we have always looked—to increased efficiency and to technical progress in the production and transmission of our product. We count on maintaining the record we have achieved so successfully so far in meeting the nation's power needs at costs so economical that—had other segments of industry managed as well—we should today have no problem of inflation.

The Moloney Electric Company, from the very beginning of the electric utility industry, has played its part in the making and the maintaining of this record. As the leading independent specialist in transformer production, development and research, Moloney has had a share in every major forward step of transformer improvement. Moloney continues, in its particular and pinpointed area of excellence, to give assurance that Moloney's resources, facilities, and production capacity will continue to be available to the electric utility industry in the service of a growing nation.

ME60-2

Since 1896... MORE POWER TO YOU

MOLONEY ELECTRIC COMPANY

MANUFACTURERS OF TRANSFORMERS FOR
UTILITIES • INDUSTRY • ELECTRONIC APPLICATIONS

Sales Offices In All Principal Cities

AT ST. LOUIS 20, MO., AND TORONTO, ONT., CANADA

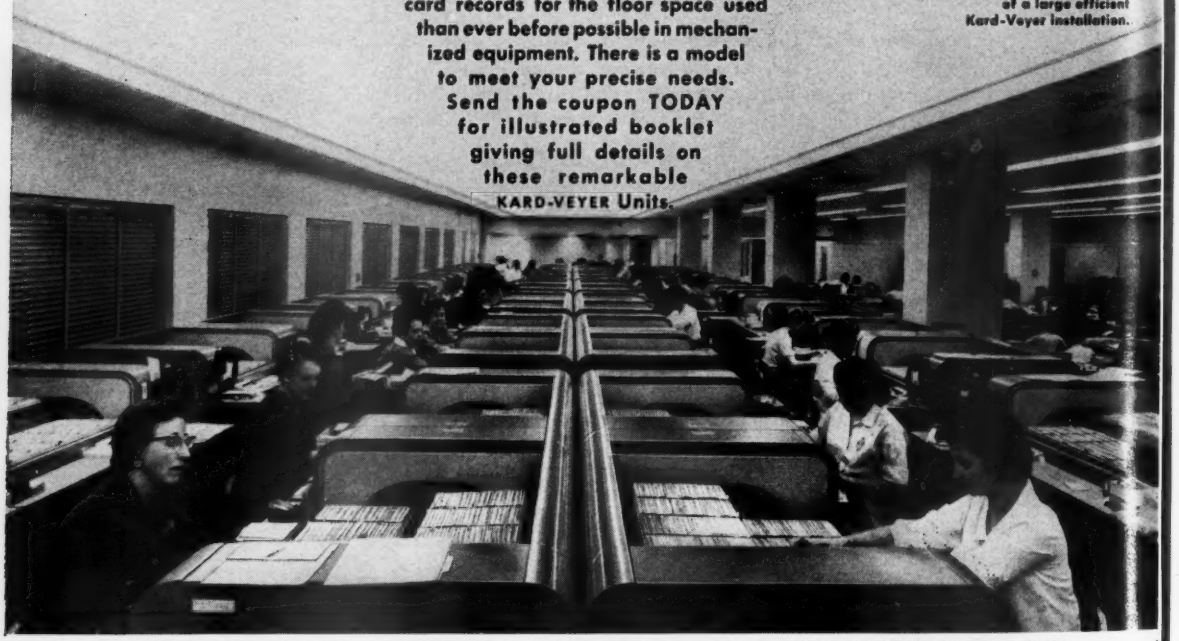
FACTORIES

HOW MANY CARD RECORDS DOES YOUR COMPANY HAVE TO COPE WITH?

IT MAY BE 15,000... OR IT MAY BE 2,500,000 (AS IN THE CASE OF THE INSTALLATION PICTURED)

Whatever the number, the new line of REMINGTON RAND KARD-VEYER® models offers the most efficient time- and money-saving mechanized equipment ever devised for card records! At the touch of a button the tray containing any desired card is delivered in 3 seconds in front of the seated operator. No more standing, walking, reaching, bending! Trays are positioned for reference *without* shadows. Superbly engineered, the units are vibrationless and whisper quiet.

KARD-VEYER units accommodate more card records for the floor space used than ever before possible in mechanized equipment. There is a model to meet your precise needs. Send the coupon TODAY for illustrated booklet giving full details on these remarkable KARD-VEYER Units.



A typical example of a large efficient Kard-Veyer installation.

KARD·VEYER®
MECHANIZED CARD FILING EQUIPMENT

APPROVED BY UNDERWRITERS' LABORATORIES INC.

by Remington Rand

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DIVISION OF SPERRY RAND CORPORATION
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Kindly send free booklet LBV 811—"New *Kard-Veyer*"

Name & Title_____
Company_____
Street_____
City_____ Zone____ State_____

THE Electric AUTOMOBILE

The Car Designed with Load Building in Mind

Bayard L. England, Board Chairman of Atlantic City Electric Company, is shown with one of the new electric automobiles purchased by his company.

It is predicted that the new electric car will be the greatest new LOAD BUILDER the electric industry has seen in many years.

FLORIDA
Statement of Condition

ASSETS

Manpower...Easy recruitment of skilled, capable, happily adjusted men and women for all types of business and industry.

Climate...Year round moderate temperature conducive to greater productivity, high morale, and good labor-management relations!

Government...Friendly to business at both state and local levels. No state income or ad valorem taxes. $5,000 homestead exemption.

Industrial Sites...Choice sites available. Excellent rail, air, water, and highway transportation facilities. Abundant water resources.

Power...Ample electric power spearheaded by the continuing expansion program of Florida Power & Light Company.

Markets...Fast growing markets throughout Florida, Southeastern U.S., and Latin America for which South Florida is the natural gateway.

LIABILITIES

FLORIDA POWER & LIGHT COMPANY

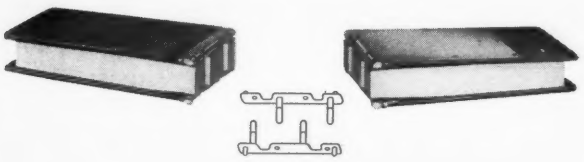
Helping Build Florida

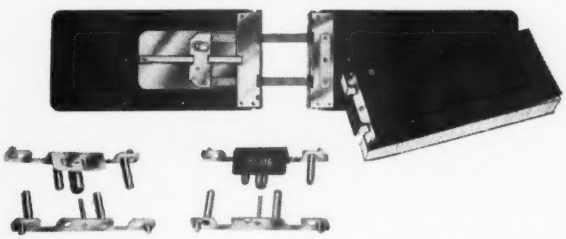
METER READER'S BINDERS

American Loose Leaf Corporation is the world's largest producer of all types of Meter Reader's Binders.

We manufacture Meter Reader Binders in a wide range of sizes and styles in durable binding materials which include Bakelite, Phenolite, Aluminum, Buckram and Canvas.

Illustrated below is our popular "Style G" meter binder. It combines the positive compression of heavy duty thongs with an ease of sheet changing provided by double sheet holding bars and expandable posts. Polished aluminum plates protect all working parts. Following are alternate components for locking and labeling contents.





Using the sheet holding bars illustrated above, meter sheets can be locked and labeled for economical mailing between billing point and route office. In this way just one set of covers can be assigned to each reader.

Please feel free to call upon us for help and suggestions on your particular binder problems. Samples can be furnished on request.

Write for our Special Meter Binder literature.

- HERCULOX
- STYLE G
- 283B
- 284

AMERICAN LOOSE LEAF CORPORATION

Founded 1904

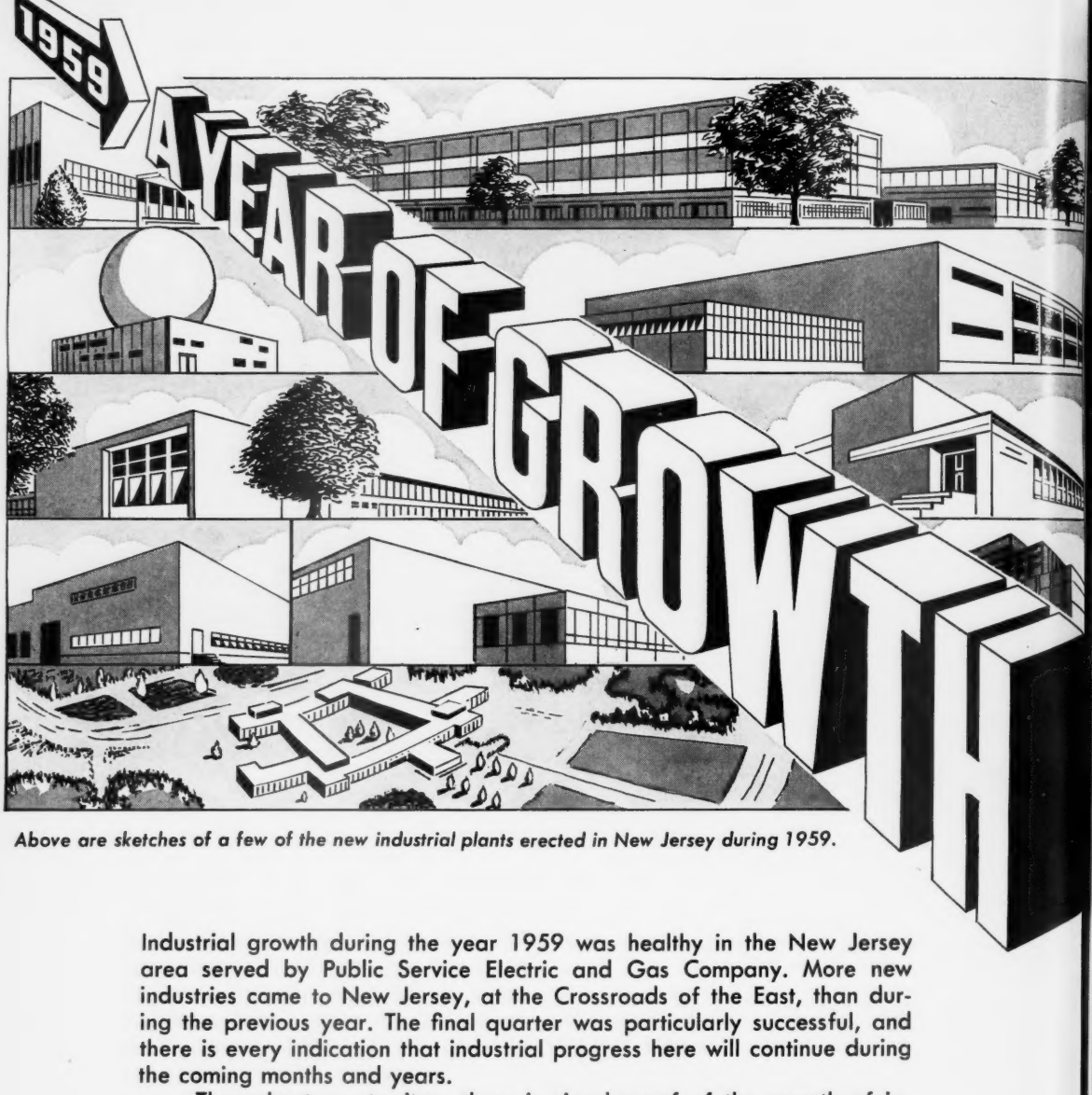
ALSO SUCCESSOR TO

REMINGTON RAND

LOOSE LEAF DIVISION

180 MAIN AVENUE • CLIFTON, N. J.

TELEPHONE: 201 PRESCOTT 3-4900



Above are sketches of a few of the new industrial plants erected in New Jersey during 1959.

Industrial growth during the year 1959 was healthy in the New Jersey area served by Public Service Electric and Gas Company. More new industries came to New Jersey, at the Crossroads of the East, than during the previous year. The final quarter was particularly successful, and there is every indication that industrial progress here will continue during the coming months and years.

Throughout our territory there is visual proof of the growth of industry, as well as new commercial centers, new office buildings and new residential areas. New, modern, landscaped industrial establishments are seen in the Delaware Valley section, as well as in Central and Northeastern New Jersey. Shopping centers and housing developments have risen in many parts of the area served by Public Service. Urban renewal is taking place in many cities.

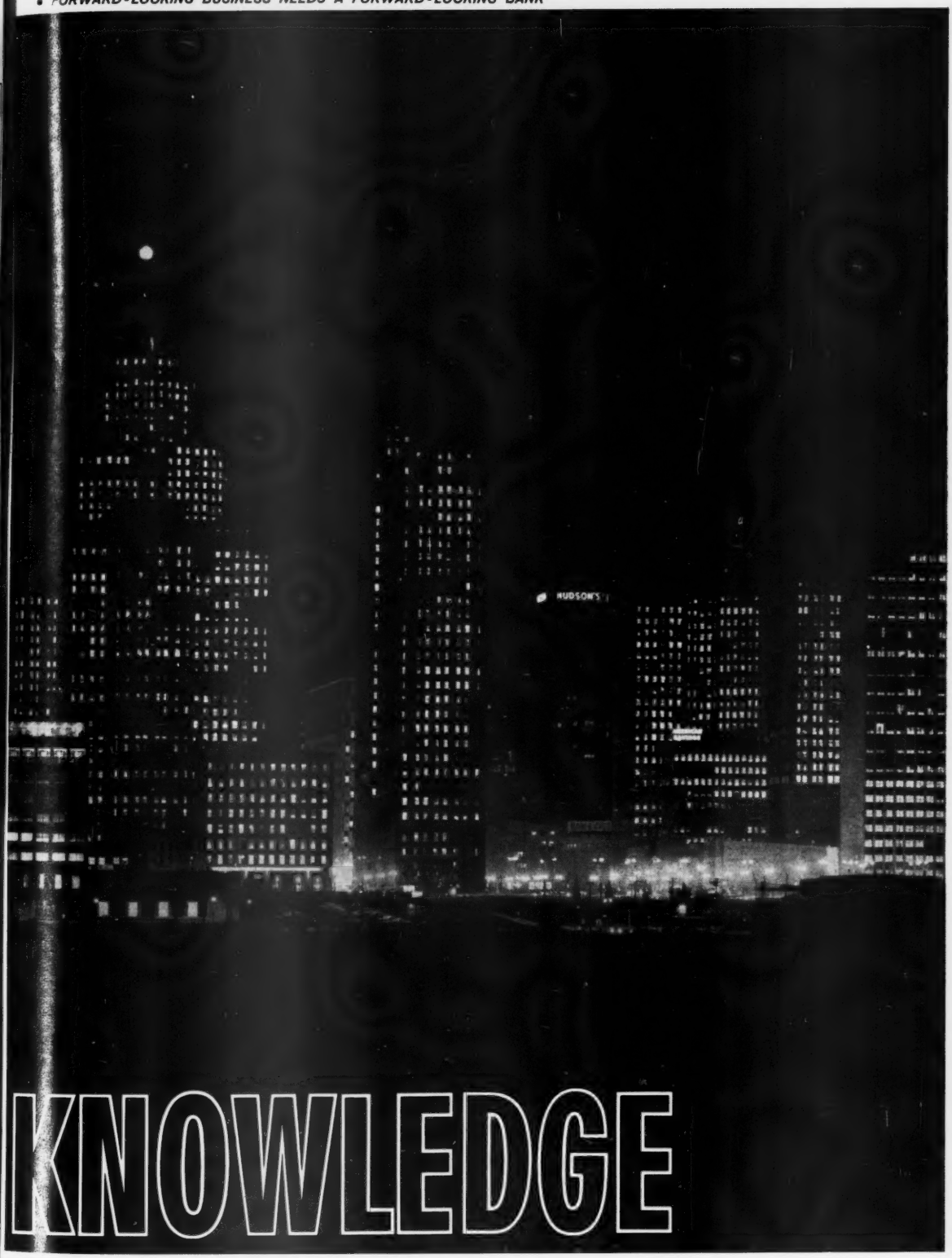
The years ahead hold great promise. All of these facts reflect the growth of New Jersey, and Public Service is growing along with this great state. We are planning and building ahead to meet all demands for our services.

PUBLIC SERVICE ELECTRIC AND GAS COMPANY • NEWARK, N. J.

Taxpaying Servant of a Great State

A-6 60

• FORWARD-LOOKING BUSINESS NEEDS A FORWARD-LOOKING BANK



KNOWLEDGE

Our service to leading privately owned public utilities is based on knowledge that keeps us abreast of the rapid evolution, expansion and progress of the industry.

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BANKERS TRUST, NEW YORK

YOUR POWER SYSTEM IS IN THE BEST OF HANDS

First the EBASCO engineer puts his finger on the problem . . . then his hands, his mind, his imagination and ingenuity go to work formulating a solution grounded in the practical, accumulated experience of EBASCO's half-century of working with the electric utility industry.

These hands are familiar with the problems, the possibilities, the capacities of a system's distribution and transmission. Countless times they have worked out the answer to a problem of production . . . of operation, or maintenance . . . of construction or of planned expansion. They have contributed new efficiency to systems which have resulted in lower cost of production.

Where is *your* system problem? In maintenance? In expansion? Do your future needs require a new site, new construction, new ideas? What of the latest equipment, of methods, of streamlined operation?

In the hands of EBASCO, are held the keys that can unlock the answers.

Our brochures describe EBASCO's services and how they may be of use to you. For copies, write Ebasco Services Incorporated, Dept. M, Two Rector Street, New York 6, N. Y.

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EBASCO
MANAGEMENT CONSULTANTS

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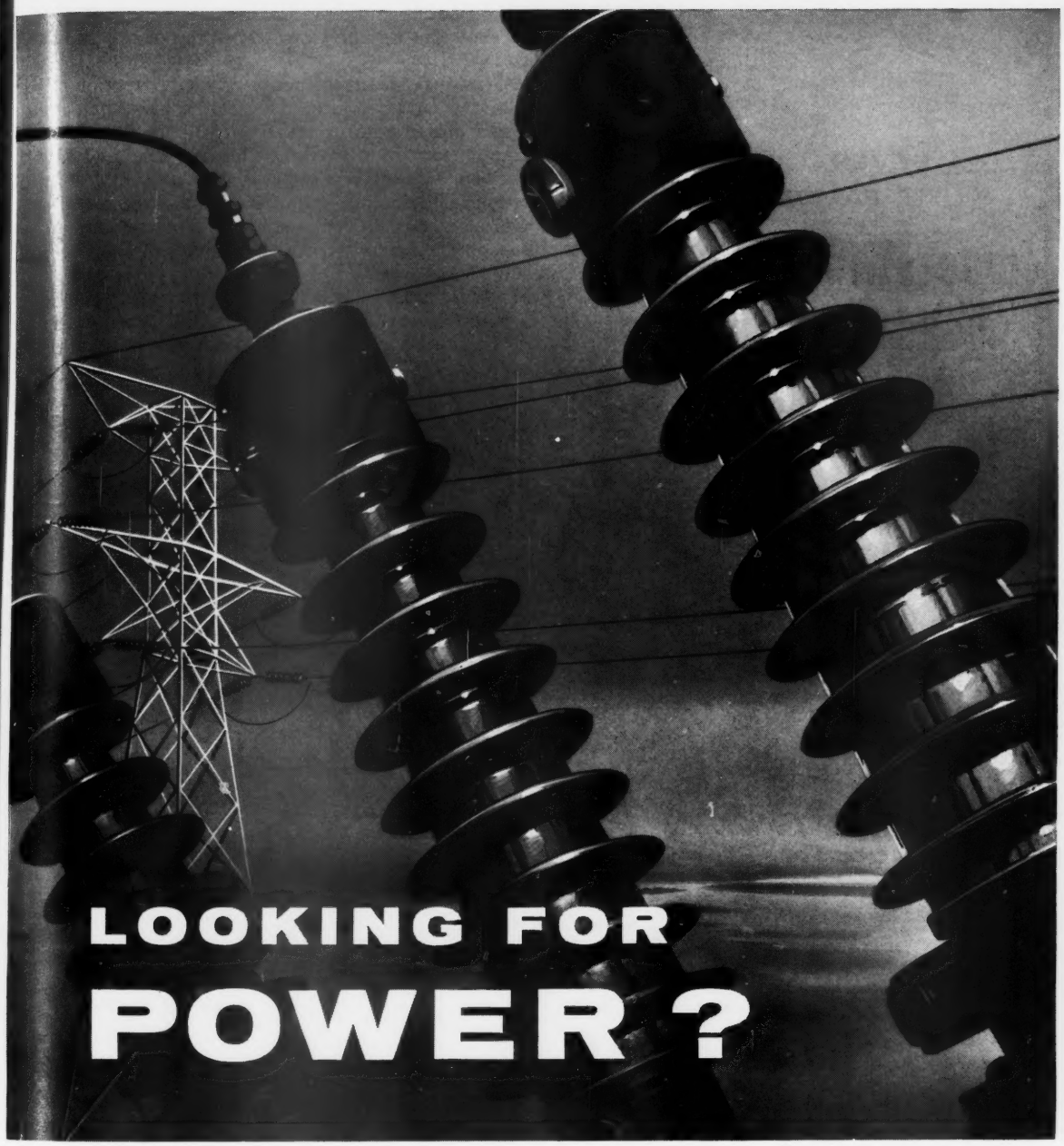
WASHINGTON, D.C.



COME TO "UPSTATE, N.Y."

new market place of the world

"Upstate, N.Y." has everything required for profitable growth of business and industry—including plenty of power. In addition, Niagara Mohawk is spending 300 million dollars in an expansion program to assure the extra electricity (and natural gas) required for the future needs of industry, business, farms and homes.

In Upstate, N.Y., you'll also find rich markets, unsurpassed transportation, skilled labor, a plentiful supply of water, and recreation and education second to none. For illustrated fact booklet and more information, write Niagara Mohawk Power Corporation, Dept. P-6, 300 Erie Blvd., West, Syracuse 2, N.Y.

POWERED BY
NIAGARA
MOHAWK

NIAGARA MOHAWK

A BEVERAGE MADE
IT FAMOUS . . .

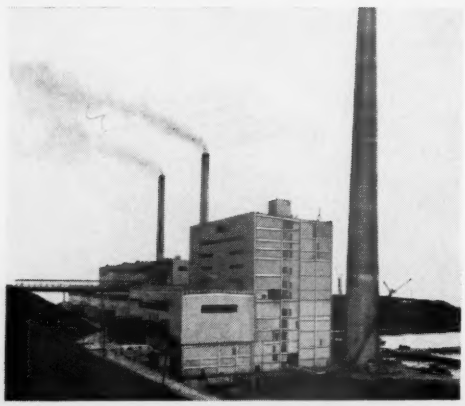
diversified industry keeps it prosperous

Milwaukee County and adjacent areas served by Wisconsin Electric Power Company are today important industrial districts.

That Milwaukee leads the nation in the production of beer is well known, but how about diesel and gasoline engines; outboard motors; motorcycles; tractors; padlocks; construction equipment? First in the nation in these and high in many others, Milwaukee County is the eighth-largest industrial center in the nation and ranks third in the use of steel. The Company also serves the important industrial communities of Racine and Kenosha — homes of Rambler, J. I. Case, Johnson's Wax.

From the factories to the fields is just a step. Included in the Company's service area are 15 counties where rich farm land and electrified farming result in average annual use of electricity of 9,577 kilowatt-hours per farm, a figure which exceeds the national average for non-irrigated farms.

To meet the electrical needs of this growing industrial and agricultural region, Wisconsin Electric Power Company is building . . .



One with a million — In 1959 the total capacity of the Oak Creek Power Plant was increased to 775,000 kilowatts by the addition of a fifth generating unit of 275,000-kilowatt capacity. When a sixth generating unit, now under construction, is placed in service at the end of 1961, Oak Creek will have a capacity of 1,050,000 kilowatts. Of all the power plants in America owned by one company for electric service to the public, only one now has a generating capacity of more than a million kilowatts.

Oak Creek has been constructed to help our customers live better and work better . . . electrically. It is a practical demonstration of our faith in the future of this area.

WISCONSIN ELECTRIC POWER COMPANY

Electricity lights the way

. . and commercial banks play a big part in illuminating the nation

. . .

Along city streets, down quiet suburban lanes and out across the byways that lead to distant farms—electricity lights the nation's way.

And commercial banks contribute.

With loans and financial services, banks help private companies create electricity, distribute it and extend power lines to new industrial and residential frontiers.

On the consumer side, bank loans frequently help wire the home and provide ready money to buy electrical appliances in neighborhood stores.

The Chase Manhattan Bank of New York, a leading lender to business and industry, is proud to be a part of the commercial banking system that helps private enterprise keep America strong.

THE
CHASE
MANHATTAN
BANK
CHARTERED IN 1799

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Today's crowded schedules demand the ultimate in Printing Accuracy and Service

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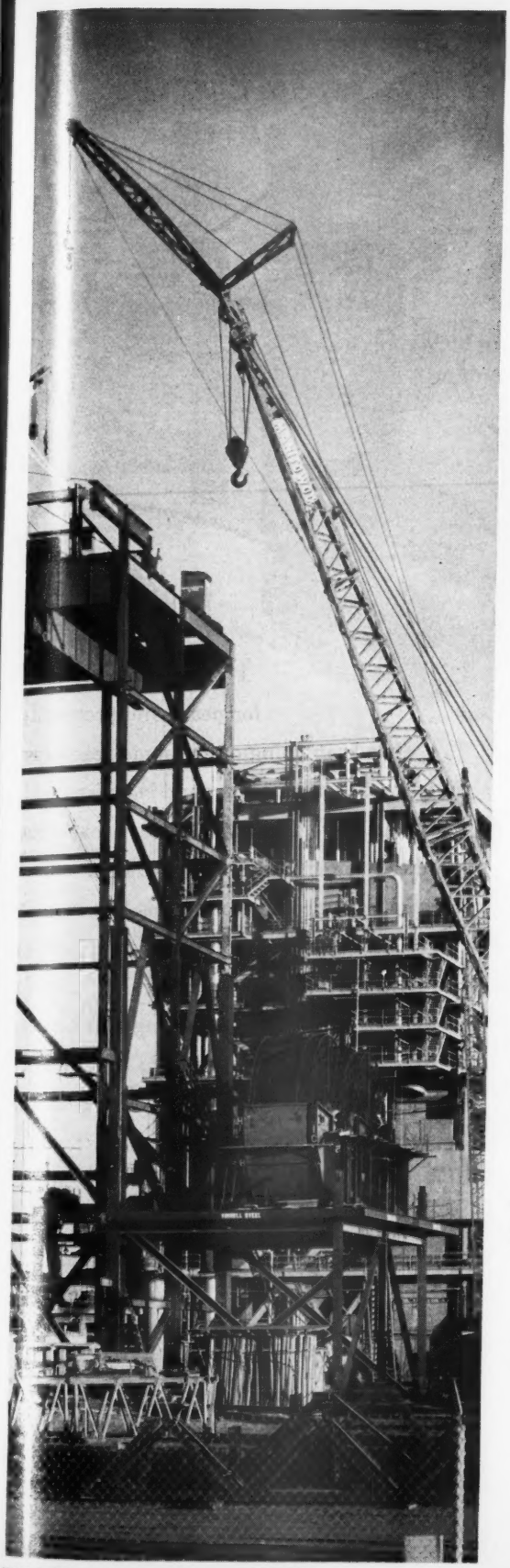


MORE POWER FOR MORE PROGRESS

Growth has been the keynote of every facet of Southern California Edison's operations during the past decade.

Each year new records have been set as new plants and lines are built to serve additional residential, industrial, commercial and agricultural customers.

Here is the story of the decade: population of Edison's service territory up from 2.8 million to 4.8 million; Company's investment in plant from $542 million to $1,366 million; kilowatt-hours transmitted from 8 billion to 17.6 billion and total meters 986,100 to 1,628,700.

Providing our customers with the power to pace the diversified growth of Southern California has been Edison's business for 65 years.

SOUTHERN CALIFORNIA

Edison

COMPANY

EDISON BUILDING • 601 WEST FIFTH STREET
LOS ANGELES 53, CALIFORNIA

In New England

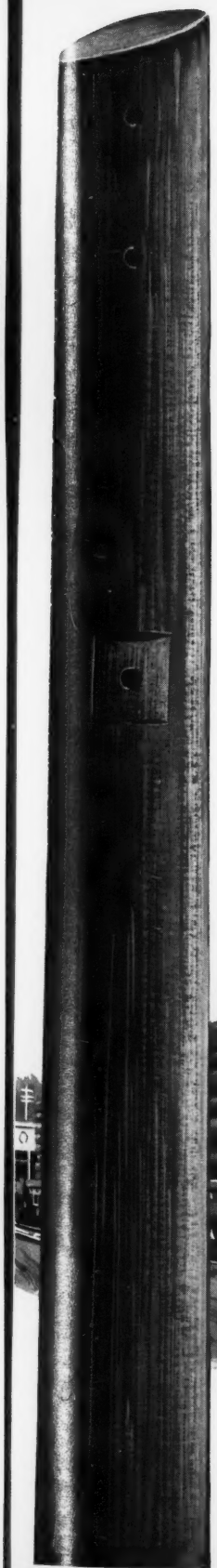
nuclear power is on the way

Putting atoms to work
for peace and prosperity
has been going on for some years now
in a number of places around New England.
At Rowe, Massachusetts, for example,
Yankee Atomic Electric is scheduled to start
producing electricity on a commercial basis late in 1960.
New England industry eats up
large blocks of electric power each working day . . . as do
hundreds of thousands of *mechanized* New England homes.
And you find the future . . .
homes and offices of advanced design,
new labs and whole new industries . . .
blending sensibly
into this traditional eye-appealing landscape.
Your plant or your business can prosper here.

This thriving region's largest electric utility system, New England Electric, lies in the heart of the world's most diversified industrial area, serves over 4,700 industrial firms and more than 1,000,000 customers.

NEW ENGLAND ELECTRIC SYSTEM

NEW ENGLAND ELECTRIC SYSTEM, Boston 16, Massachusetts



LONG-BELL

Sentinels Of Service

For almost a half-century Long-Bell Poles have been identified with this phrase.

Manufactured and distributed by highly skilled and experienced craftsmen, these poles like other *Long-Bell* pressure-treated products are just another example of the quality that this name implies. Expert treatment with proven preservatives is an unvarying standard of performance at every one of five wood preserving plants located strategically to give prompt and efficient service.

also

PILING LUMBER TIES POSTS
CREOSOTE PENTACHLOROPHENOL WOLMAN SALTS®

INTERNATIONAL PAPER COMPANY
WOOD PRESERVING DIVISION
De Ridder, La. Kansas City, Mo. Longview, Wash.

New Fleet Car Favorite of America's Public Utility Companies

RAMBLER

Public Utility Companies are buying more Ramblers for fleet use than any other make car. Here's why—

- **LOW FIRST COST**—You save when you first buy Rambler. Compare Rambler's low initial cost with that of your other fleet units.
- **LOW MAINTENANCE COSTS**—Rambler is quality-built throughout. Rugged Single-Unit* construction and Deep-Dip* rust-proofing assure longer car life . . . more trouble-free service . . . less "down-time" . . . lower maintenance costs.
- **TOP ECONOMY**—Rambler record-breaking economy is further authenticated by utility company records. You save every mile your Rambler fleet units operate.
- **WIDEST MODEL CHOICE**—Fleet operators can choose from 33 Rambler models, including 17 station wagons—3 wheelbases—4 engines—6's and V-8's.
- **TOP RESALE VALUE**—You save again with Rambler when it comes time to trade or sell. Rambler's *proved* resale value is authenticated by official used car guide books.

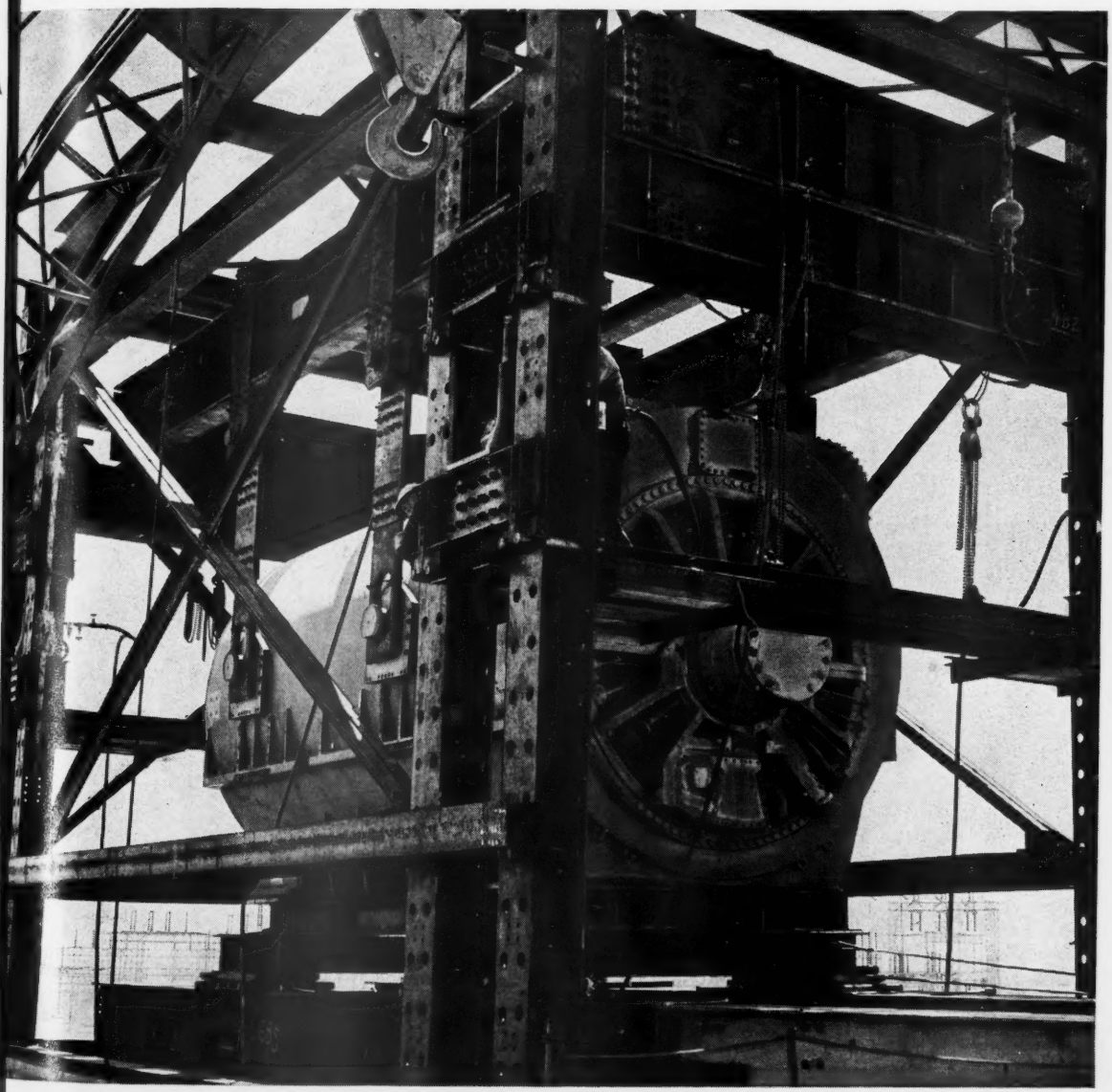
*Pioneered by American Motors

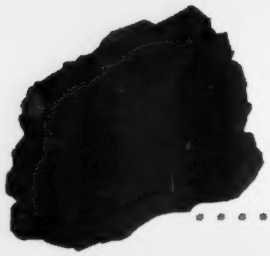
RAMBLER—From America's Most Experienced Builder of Compact Cars

For Complete Information On How RAMBLER Can Cut Your Fleet Costs...

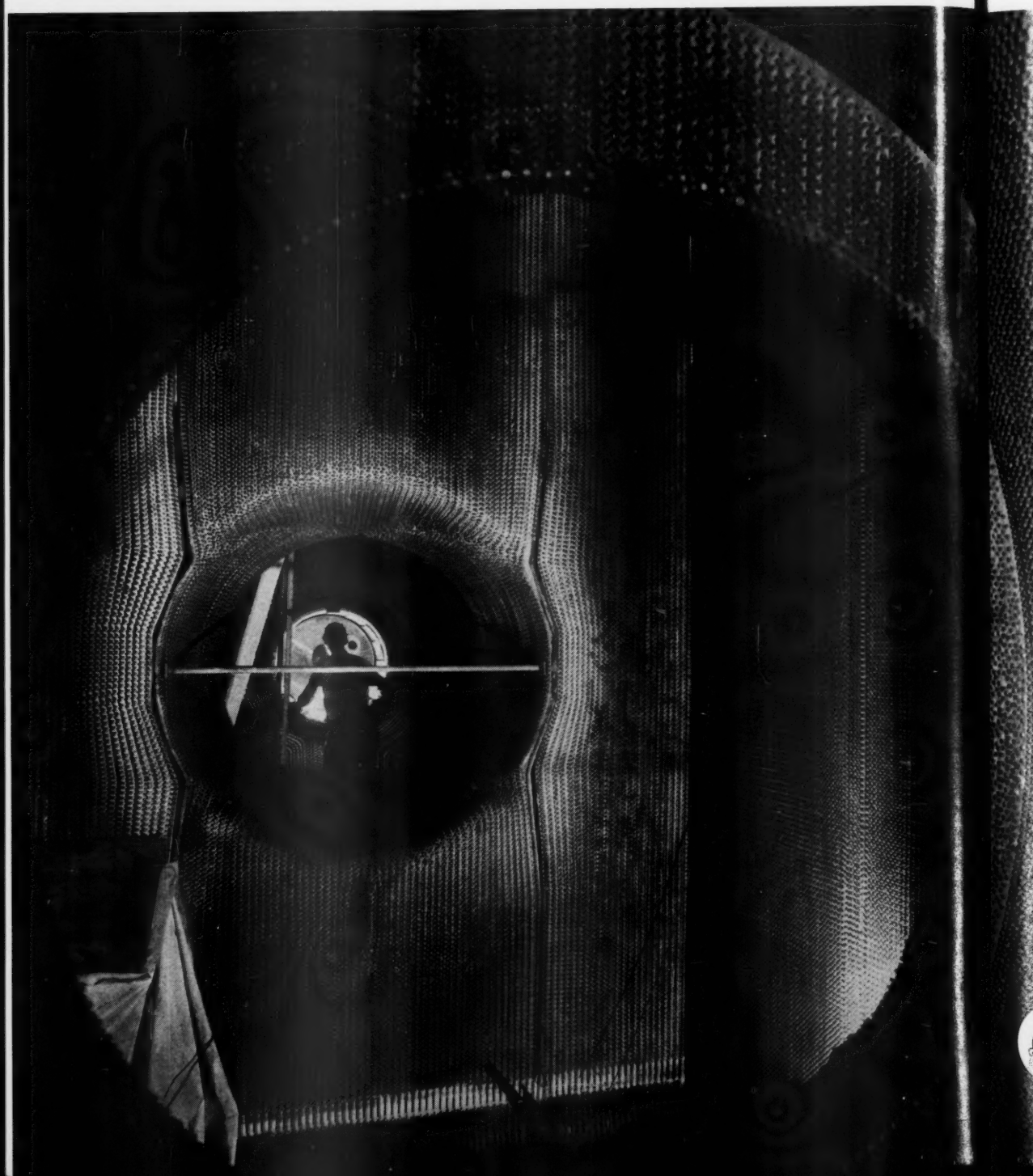
SEE YOUR RAMBLER DEALER
. . . or write or wire
FLEET SALES DEPARTMENT
DEPT. J-69
AMERICAN MOTORS CORP.
14250 Plymouth Road, Detroit 32, Michigan

This cradle holds a big baby...to help us grow with booming California. It's one of the two 325,000 kw generators which will double capacity at our Pittsburg Power Plant to 1,310,000 kw! This is another big step in our continuing expansion to serve over 1000 new customers each week. Pacific Gas and Electric Company





"Cheap and dirty" coa..a



...a premium performer in the

B&W Cyclone Furnace

Low-cost, unwashed, high-ash coals actually aid efficient combustion in the B&W Cyclone Furnace

Low grade coals are effectively fired in the B&W Cyclone Furnace with a continuous high velocity blast of secondary air, causing a cyclonic turbulence. Ash in the coal is melted to form a viscous fluid bed around the cylindrical furnace walls. This slag bed traps incoming coal on its surface, letting the high velocity secondary air scrub the coal, burning out maximum Btu's. More than 80% of the ash is trapped in this liquid slag and tapped into slag tanks before entering the secondary furnace.

So—the high slagging characteristics of low-cost, unwashed, low-fusion-temperature coals make them an *especially attractive* fuel!

In addition, B&W Cyclone Furnaces offer all of the following advantages:

- **Simplification of coal burning equipment**
- **Less atmospheric pollution**
- **Elimination of fly ash handling and disposal problem by reinjection system as a part of the unit**
- **Less space, smaller building**
- **Less maintenance and cleaning**
- **Safer operation, simpler remote control**
- **Increased availability**

The unit under construction on the left is one of the more than 325 B&W Cyclone Furnaces to be erected to meet the increasing needs for maximum efficiency of energy conversion in the power industry. We would welcome an opportunity to put the advantages of a B&W Cyclone Furnace in *your* language. For further details, please contact your local B&W representative . . . or write for B&W Bulletin G-65. Address: The Babcock & Wilcox Company, Boiler Division, Barberton, Ohio.

G-965

B&W

THE BABCOCK & WILCOX COMPANY

BOILER DIVISION

atomic progress

THROUGH

58 YEARS

pioneer

SERVICE

&

ENGINEERING CO.

231 S. La Salle Street,
Chicago, Illinois

In 1952 Pioneer joined with other groups, all reporting to the Atomic Energy Commission, for constant study of atomic energy application. Today Pioneer is qualified as a consultant to industry in the application of atomic reactor systems to the generation of electric power. Presently, Pioneer is acting as architect-engineer and supervisor of construction of the 66,000 kw commercial atomic power plant shown here. Allis-Chalmers Mfg. Co. is the prime contractor. Scheduled for 1962 completion, the plant, for the Northern States Power Co., will be known as the "Pathfinder".

Organized as Central Utilities Atomic Power Associates, these utilities will share in the research and development costs: Northern States Power Co., Central Electric and Gas Co., Interstate Power Co., Iowa Power and Light Co., Iowa Southern Utilities Co., Madison Gas and Electric Co., Mississippi Valley Public Service Co., Northwestern Public Service Co., Ottertail Power Co., St. Joseph Light and Power Co., Wisconsin Public Service Corp.

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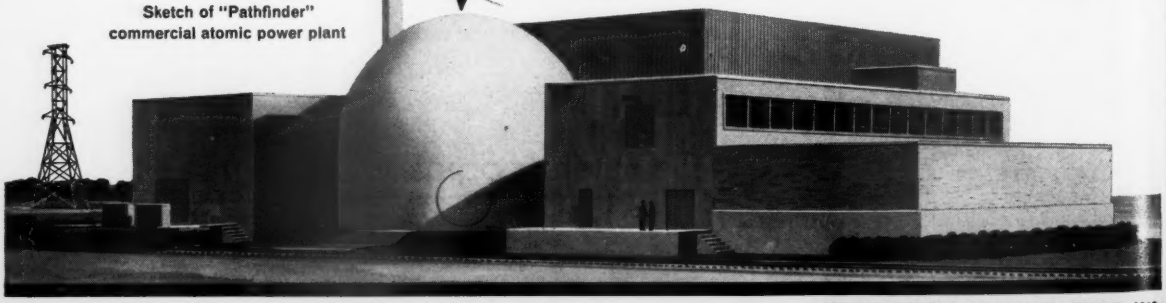
Sketch of "Pathfinder" commercial atomic power plant



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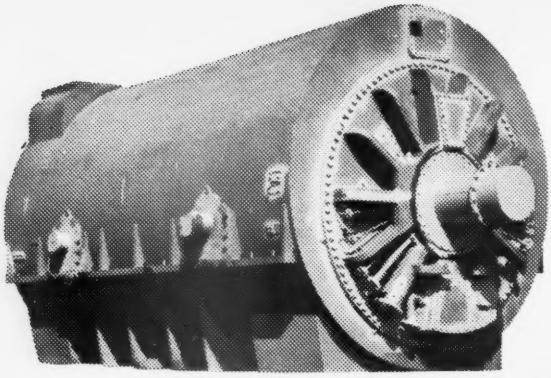
WRITE TO: D. H. White,
Manager Business Development Dept.,
Dept. A4, Utah Power & Light Co.,
Salt Lake City 10, Utah

A Growing Company in a Growing West



1/2

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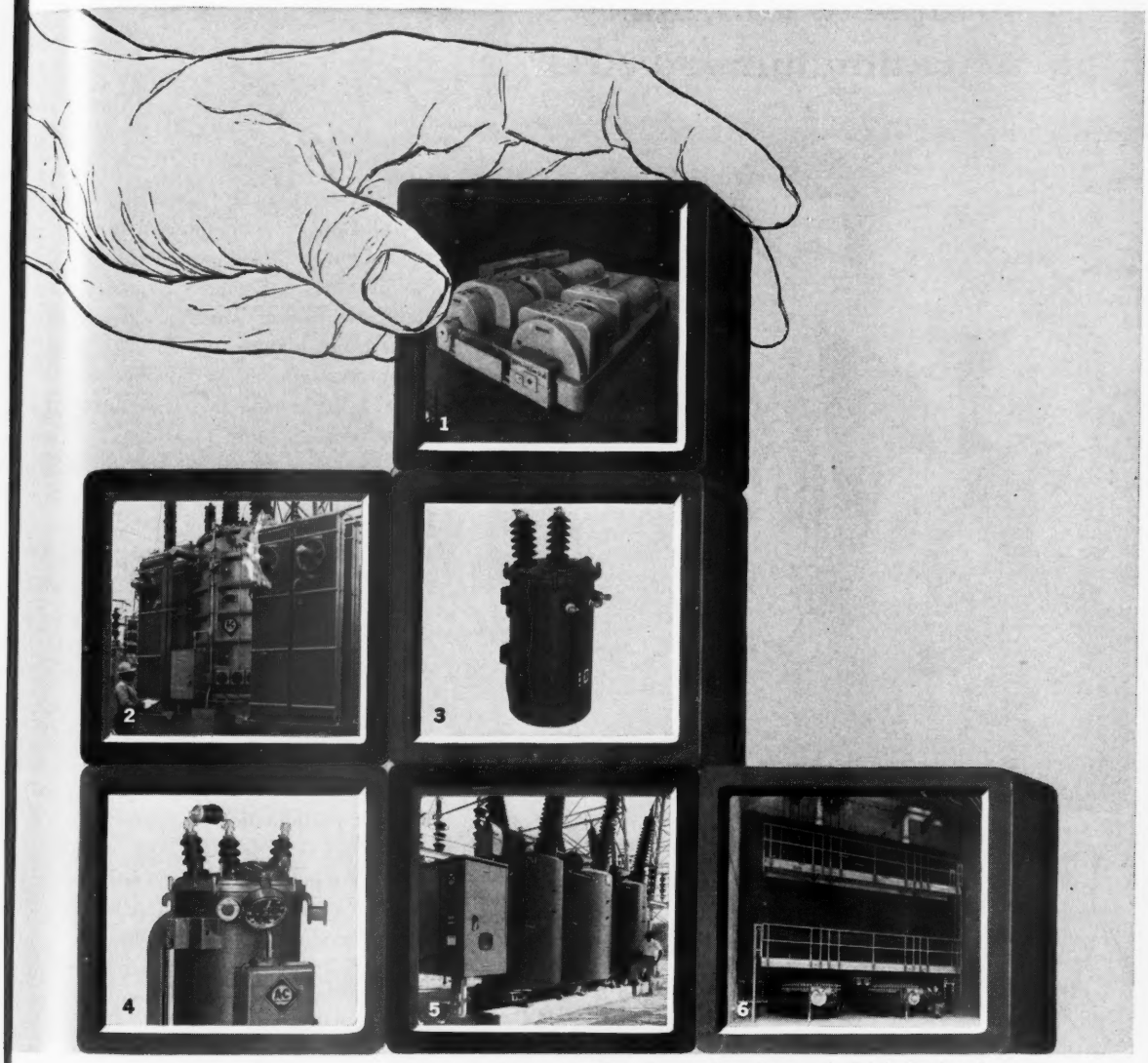

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Public Utilities Fortnightly

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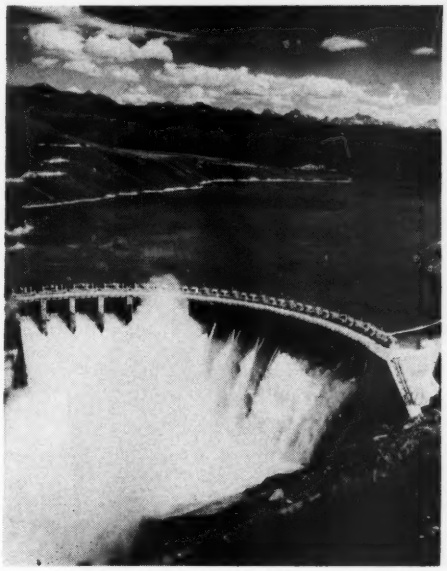
Power To Keep Montana's Wheels Whirring



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There's plenty of power in the Treasure State . . . we're seeing to that!

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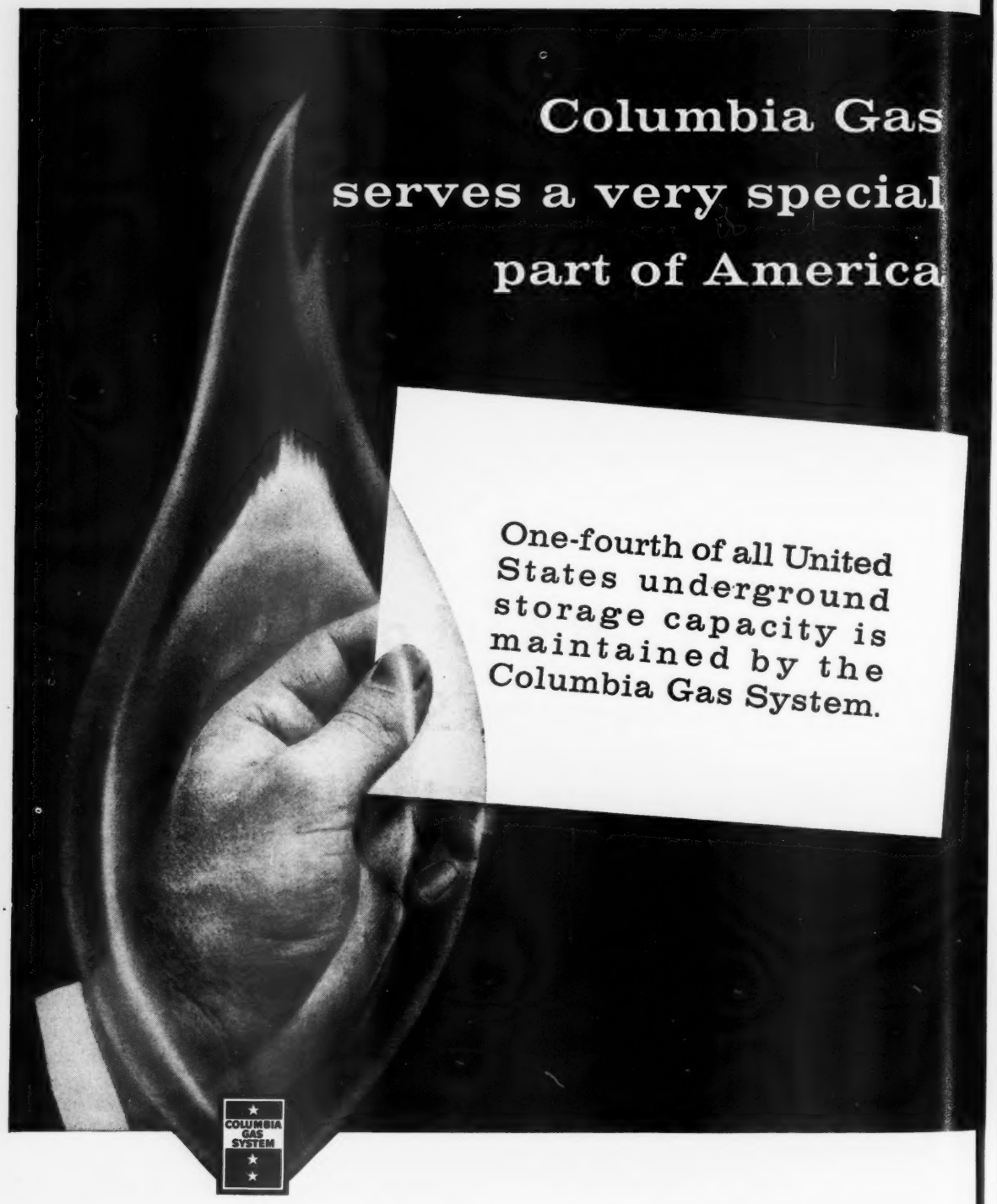
- **INDUSTRY**—Montana's oil and lumbering industries have more than trebled since 1946.
- **PEOPLE**—The population of the state has gained steadily since 1946. Montanans use 12% more electricity than the national average.
- **OUR COMPANY**—In the past decade we have more than doubled our plant to remain ahead of the requirements of our customers.

THE MONTANA POWER COMPANY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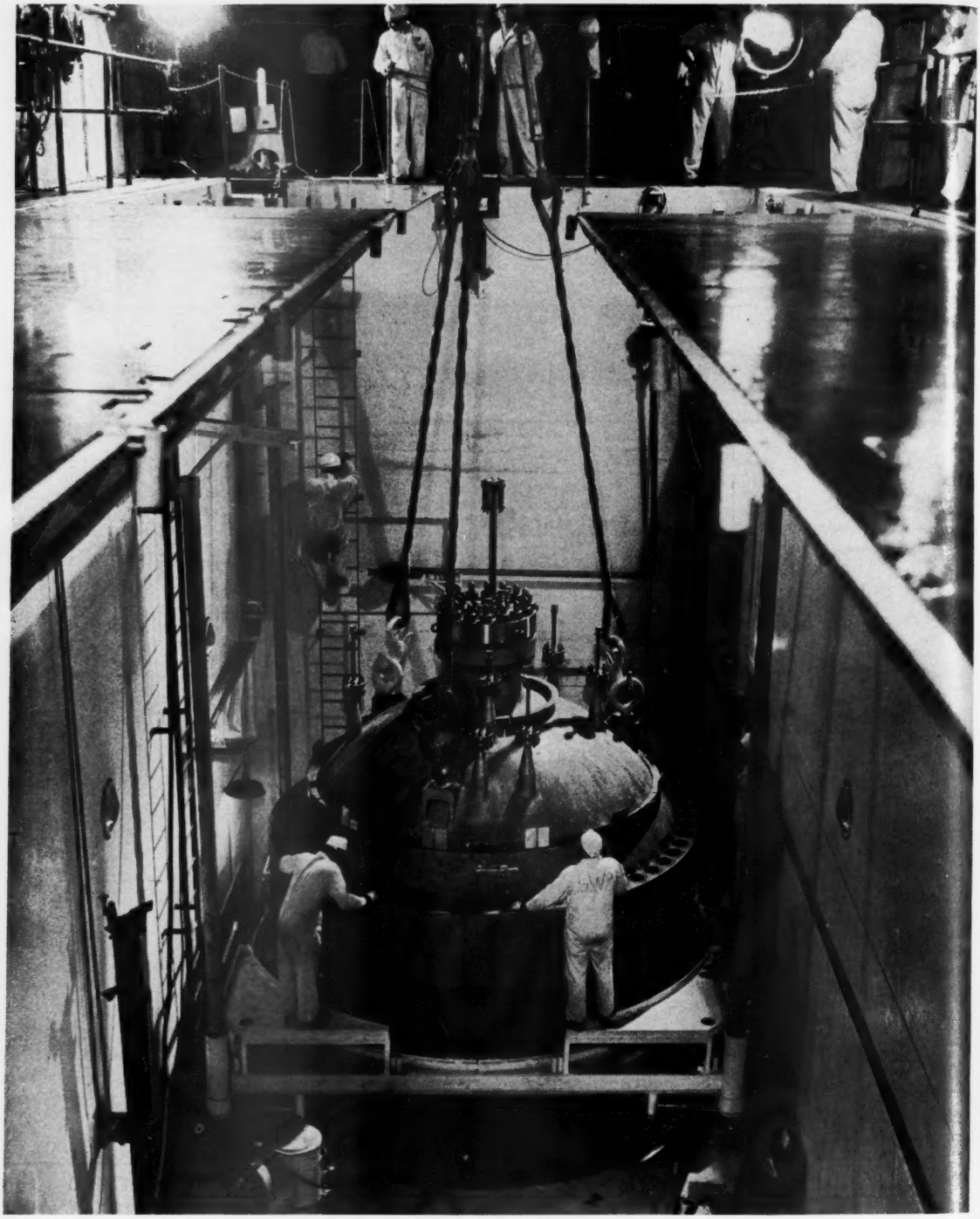
UTILITIES *A·l·m·a·n·a·c·k*

JUNE

Thursday—9 *National Coal Association, anniversary convention, begins, Washington, D. C.*	**Friday—10** *California Telephone Association ends three-day annual convention, San Francisco, Cal.*	**Saturday—11** *National Society of Professional Engineers ends four-day annual meeting, Boston, Mass.*	**Sunday—12** *American Nuclear Society begins annual meeting, Chicago, Ill.*
Monday—13 *American Society of Heating, Refrigerating, and Air - Conditioning Engineers, Inc., begins annual meeting, Vancouver, British Columbia, Canada.*	**Tuesday—14** *Illuminating Engineering Society ends two-day Canadian regional conference, Halifax, Nova Scotia, Canada.*	**Wednesday—15** *Northwest Electric Light and Power Association, Accounting and Business Practice Section, begins meeting, Portland, Ore.*	**Thursday—16** *Washington-Oregon Telephone Associations begin annual convention, Portland, Ore.*
Friday—17 *American Society for Testing Materials will hold annual meeting, Atlantic City, N. J. June 26-July 1.* ***Advance notice.***	**Saturday—18** *Michigan Gas Association will hold meeting, Mackinac Island, Mich. June 27, 28.* ***Advance notice.***	**Sunday—19** *American Institute of Electrical Engineers begins summer general meeting, Atlantic City, N. J.*	**Monday—20** *American Society of Mechanical Engineers begins applied mechanics conference, University Park, Pa.*
Tuesday—21 *New England Conference of Public Utilities Commissioners begins, Vergennes, Vt.*	**Wednesday—22** *National Conference on Electronics Standards begins, Boulder, Colo.*	**Thursday—23** *National Association of Plumbing Contractors ends four-day annual meeting, Cleveland, Ohio.*	**Friday—24** *First Energy Institute will be held, Washington, D. C. June 27-July 1.* ***Advance notice.***



Largest Nuclear Power Plant in the U. S.

Owned and operated by Commonwealth Edison, the Dresden nuclear power station in northern Illinois is the world's first full-scale, privately financed atomic generating plant; has a 180,000-kilowatt turbine generator. Workmen are shown placing 50-ton head on reactor vessel prior to start of operation.

Public Utilities
FORTNIGHTLY

VOLUME 65 JUNE 9, 1960 NUMBER 12

Meeting Tomorrow's Power Needs

By ALLEN S. KING*
President, Edison Electric Institute

The population explosion predicted for the next twenty years will pose no problem for the investor-owned electric utilities. They will prove themselves ready and able to supply the power needs of the nation efficiently and inexpensively. Steam-produced power seems destined to hold its lead, with hydro second. But nuclear power seems almost certain to overtake and exceed hydro power by 1980. Whatever tomorrow brings in electricity demand, the ingenuity of the electric industry will be sufficient to meet it.

As we enter the decade of the sixties, there is great interest on the part of many Americans on how the electric power industry is preparing to meet the demands and challenges ahead.

In the eight decades since its beginnings, the industry has become an increasingly important factor in the way every American lives and works. Electric power is basic to gains in productivity and the standard of living, and at the same time growth in power use is stimulated by the overall progress of the economy.

To assure the continued effective rôle of electricity in serving the needs of the public and the nation, the investor-owned electric companies are now planning and building for the years ahead. The companies have looked realistically at the expected dimensions of power supply for 1970 and 1980, and a few weeks ago the findings were published by the Edison Electric Institute in a booklet titled "Meeting Tomorrow's Power Needs," which gives in broad outline the plans of Amer-

*Also president of Northern States Power Company. For additional personal note, see "Pages with the Editors"

ica's electric light and power companies for the next twenty years.

In addition to a continuing study which is made periodically by the institute's electric power survey committee, an exhaustive study covering the entire nation was made over a period of many months by a task force of electric power experts from electric utility companies. While this study was being conducted regionally, on the basis of the eight power supply regions as defined by the Federal Power Commission, a national projection was being developed at the institute. The projections included capability, generation, and dollar amounts for new construction.

When the field work, based on studies and plans of individual utility companies in the various regions, was compared with the nation-wide projections, the results tallied very closely. Consequently, we feel that the findings are as realistic and as accurate as is possible, keeping in mind, of course, that unforeseen events can inflict short-term detours on any forecast.

Companies Stand Ready to Meet Future Power Needs

The results of all of this careful study can be summarized in one sentence: The nation's investor-owned electric companies stand ready and able to meet in full the future power needs of this country.

At present, investor-owned electric companies account for more than three-quarters of the kilowatt-hours sold in the United States. The companies serve about 80 per cent of the customers in the nation, with the rest being accounted for by governmental agencies and co-operatives. The electric companies provided more than 127 million kilowatts of generating capability at the beginning of 1960. The federal government and other agencies provided 38 million kilowatts.

The forecasts made by the institute task force for 1970 and 1980 deal only with prospects for the investor-owned companies.

By 1970 the electric companies expect to double their present power-producing capability, bringing the total to 263 million kilowatts. To do this will require about $52 billion in new construction. (All dollar figures are based on the 1959 price level.) This money will come from sales of electricity and the voluntary investments of millions of people. Historically, America's electric industry has built its world leadership with the funds provided in a free investment market. The electric companies have every confidence in their ability to attract funds in the free market to provide for the power needs of the future.

The power needs of the future will not come automatically. Ever since the days when the electric iron was a newfangled gadget viewed by the public with some suspicion, the electric companies have been promoting the use of electricity, as well as building and developing power supply systems. We are continuing today with the Live Better Electrically program and other activities to bring before all Americans new uses of electric service which will benefit people in their homes and on their jobs.

In a growing economy, with a population expected to increase by 68 million in twenty years, more and more Americans will be using more and more electricity. To provide this power, the electric com-

panies expect to reach in 1980 a capability of more than 492 million kilowatts, nearly four times today's total. To do this they will have spent on new construction from the end of 1970 through 1980 more than $91 billion.

Twenty-year Total: $143 Billion for New Construction

ALTOGETHER, from the beginning of this year through 1980, more than $143 billion will be required to expand the electricity supply systems—a sum in excess of three times the present investment. Two decades from now it is estimated that the new construction expenditures will be at an annual rate of about $12 billion, compared to about $3.5 billion in 1960.

The forecasts to 1980 presuppose a continuation of the growth of the overall economy at about the same rate as has been maintained since the end of World War II. The trend is for new heights of prosperity for the people of the United States by that year, with vast increases in the number of Americans enjoying that prosperity and contributing to it.

We of the investor-owned electric industry believe that these increases in individual and national well-being will come about through the continuation of America's free economic system. We believe that the people of the United States will continue their individual savings programs through bank deposits, insurance, investments, and other means, and will continue to provide through the free market the funds for the required capital expansion of all American industry.

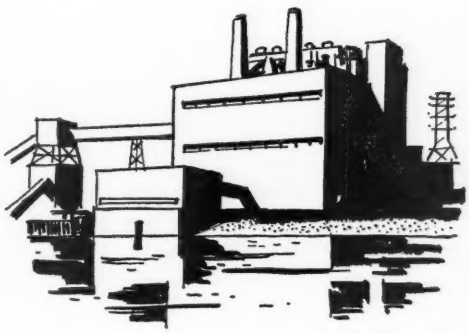
These forecasts for the future are indications of the basic faith the electric companies have in the vigor and potential of the United States. And, in planning for the electricity supply systems for the decades ahead, the companies are including substantial margins of reserve capability to assure that whatever the eventuality, electric power will continue to be adequate to serve America's needs, whether in peace or war.

Generation in 1970 and 1980

WITH the greatly expanded power systems of the future, the electric companies will be generating electricity in quantities measured by a new series of numbers—the trillions.

In 1970 the electric companies expect their output to be about 1.2 trillion (1,200,000,000,000) kilowatt-hours, more than double that of last year. In the following decade, annual output will about double again, with 1980 estimated at nearly 2.3 trillion (2,300,000,000,000) kilowatt-hours.

It is generally recognized that one of the best indications of a nation's economic strength and the well-being of its people is per capita use of electricity. Nearly 40 per cent of all the electrical energy generated in the world is used by the American people, who represent only 6 per cent of



the world's population. In 1959, total power output by the United States amounted to 4,525 kilowatt-hours for every man, woman, and child in the country. In 1970, per capita output is expected to be 7,555 kilowatt-hours, and in 1980, the per capita forecast is about 11,800 kilowatt-hours.

Types of Generating Capability in the Future

To produce the tremendous quantities of electricity in the future, steam plants using coal, oil, or gas will continue to be the prime means. Hydro plants will continue in second place for some years. However, there is an interesting change in emphasis foreseen over the next twenty years.

In 1959 the electric companies had nearly 112 million kilowatts in conventional steam plants and about 12.5 million in hydro plants. Nuclear power plants, in which the U. S. Atomic Energy Commission, electric companies, and manufacturers are participants, provided 65,000 kilowatts of electric capability. In 1970, it is expected that steam will account for about 225 million kilowatts, hydro for 20 million, and nuclear plants for nearly eight million kilowatts. For 1980, a sharp shift is forecast. Steam capability should reach nearly 417 million kilowatts, but nuclear capability is expected to move into second place with some 39 million kilowatts. Hydro should reach about 25 million kilowatts.

In the next twenty years, then, it is expected that steam plants will nearly quadruple in capability, hydro about double, while nuclear plants will increase 600-fold.

One reason for this is the fact that most of the nation's economically feasible hydro sites have been developed. In the future, hydro developments will be planned to meet special characteristics of the various area loads, and it is expected that there will be an increased use of pumped storage hydro.

In the nuclear field, however, there are many research and development opportunities. The electric companies, in cooperation with the AEC and equipment manufacturers, are vigorously engaged in nuclear power projects which will require the eventual investment by the electric companies of at least $650 million. Their aim is to achieve in the late sixties, in the high-cost fuel areas of the country, nuclear power competitive with electricity from the conventional fuels.

Should future developments improve the competitive position of nuclear power sooner than expected, the electric companies will utilize nuclear capability in place of some of the conventional steam capability planned for the years ahead.

Another broad area of promise involves direct conversion to electricity of raw energy such as heat, chemical and nuclear sources, without the use of such expensive conventional equipment as turbines and generators.

A group of ten electric utility companies and a manufacturing company recently announced the success of an experimental laboratory device making use of the principle of magneto-hydrodynamics (MHD). This involves the passing of an ionized gas through a magnetic field to produce electricity. Of course, the MHD system may not become practicable and competitive with conventional equipment

for many years, but it could eventually bring great increases in efficiency.

ONE measure of the value of advance in engineering and operation has been the steady decrease in the price of electricity. The price of a kilowatt-hour used in the home is less than half what it was twenty-five years ago. This is true despite the effects of inflation on the cost of materials and services. This record has been made possible by constant improvement in equipment, in all phases of operation, by sound government regulation, and by increased use by customers.

Today, we are using larger and larger generating units, operating at higher steam temperatures and pressures. We are using higher and higher voltages to transmit and distribute electric energy.

The expansion and interconnection of electric systems for better, more economical service to customers have been continuing over the years. This work has resulted in our great power pools of today in which transmission and generating facilities of a number of companies are tied together.

Pooling not only provides vast resources of power to meet customer needs in different areas, but it helps keep costs down and increase service reliability.

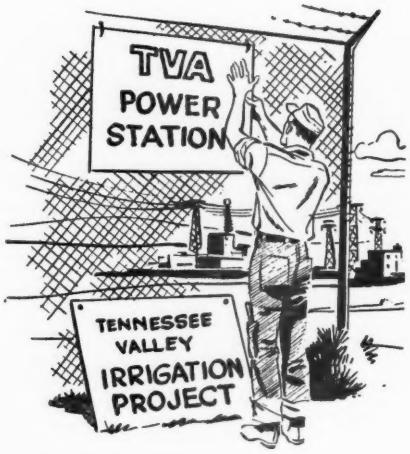
The Year 2000

THE electric companies will continue to work vigorously in new technical fields, and they will continue to improve and develop concepts of power supply already known. And they will constantly seek and promote new uses of electricity.

Looking to the far future, these efforts and those of manufacturers and others in the industry should result in a total power output for the United States in a range of 6 trillion to 10 trillion kilowatt-hours in the year 2000, depending on the rate of growth of the national economy and the rate at which new energy uses are introduced.

PREDICTIONS for a period four decades distant have to be viewed as rather indistinct outlines. The passage of time and events will bring these possibilities into clearer focus, and the investor-owned electric companies will constantly assess their shapes and dimensions. Plans and building activities reflect the changing future to assure that Americans will continue to have ample electric power—to help them on their jobs, to provide better living at home, and to aid in the preservation of a civilization based on the principles of individual freedom.

Do Low Electric Rates Increase Net Earnings?



By C. S. REED*
Vice President and Rate Consultant,
Duke Power Company

Using the TVA rates as a case study, this analysis raises an interesting question about whether low rates invariably increase earnings in the electric utility business, or whether there is a limit and whether discrimination would result. The author draws some conclusions which should interest all those concerned with the economics of electric utility rate making.

In a booklet sent out recently by TVA, entitled "1959 Facts about TVA Operations," the following statements are made:

> It was not intended, as is sometimes assumed, that TVA rates would become precise measurements of the rates which other systems should charge.
>
> * * * *
>
> Electric rates in the valley region are based on the principle that low prices produce greater sales which lead to economies in production, transmission, and distribution, and hence to lower costs per unit. This principle is well known in American industry, but has been applied meagerly by the electric utilities.

The first of these statements raises a question. When TVA was getting under way under the guidance of former TVA Chairman David Lilienthal, he repeatedly stated that "Congress has provided for the production of electricity to provide a yardstick by which to measure the fairness of the rates of private utilities." He added that "all of the costs of private utilities were considered" in designing the rates.

What Are the Facts?

Of course, the rates are used as a yardstick, especially under the "competition by comparison" described in the TVA

* For additional personal note, see "Pages with the Editors."

booklet. The fairness of this yardstick will not be discussed here, but let us examine the second paragraph, that low rates produce greater sales which lead to more efficient operation.

Let us examine the records of the TVA distributors as published annually by TVA and see if these prove or disprove the statement, and whether the TVA has shown the private utilities how to make money by cutting rates. Every figure in the accompanying tables has been taken from the published reports of the TVA distributors sent to the writer by the TVA Accounting Department.

THE first table, this page, gives the records of the combined TVA distributing system, including all of the municipalities and co-operatives. Since Memphis has recently left the TVA family, we have eliminated the Memphis figures for the years 1947, 1949, 1958, and 1959.

In Table I we have also shown the per cent growth of investment and net earnings from 1947 to 1959 and from 1949 to 1959. The investment figures shown are for the original cost less depreciation after deducting acquisition adjustments. When TVA turned the properties over to the distributors, the records were set up on an original cost less depreciation basis with acquisition adjustments equal to the excess of the purchase prices over what TVA thought the properties were worth. As to whether these estimates were correct we shall have some further comments later on.

THE table shows net earnings of the system have made a substantial growth, but nothing like the growth required in investment by the municipalities, so that the per cent return has been cut in

DISTRIBUTORS OF TVA POWER
TABLE I
SYSTEM GROWTH

	Millions of Dollars				
	Investment		*Net*	*Per Cent*	*Thousands*
Year	*Gross*	*Net*	*Earnings*	*Return*	*Of Customers*
1947	148	111	13.65	12.3%	744
1947*	123*	92*	11.00*	12.0*	637*
1948	183	144	16.08	11.2	851
1949	242	195	18.21	9.3	985
1949*	212*	172*	15.20*	8.9*	877*
1950	289	235	19.19	8.2	1,099
1951	331	269	20.34	7.6	1,170
1952	369	298	21.58	7.2	1,226
1953	408	327	23.17	7.1	1,284
1954	445	354	24.82	7.0	1,333
1955	484	380	28.83	7.6	1,376
1956	528	410	30.50	7.4	1,424
1957	574	443	29.43	6.6	1,460
1958	708	562	31.62	4.5	1,498
1958*	535*	408*	27.12*	6.6*	1,324*
1959*	575*	433*	27.05*	6.2*	1,369*
% Growth					
1947-59 ...	368%*	370%*	145%*		115%*
1949-59 ...	171%*	152%*	78%*		56%*

* Excluding Memphis.

half since 1947, ending with 6.2 per cent in 1959. In considering this figure it must be remembered that this is before any deduction for interest on bonds or for the income taxes which would have been required of a private utility operating in these municipalities. A private utility earning only 6.2 per cent before interest or income taxes would not last long.

However, it might be claimed that the lower rate of return in recent years is due to a lot of rate reductions made by the municipalities, with subsequent promise of greater net earnings, in line with the theory that reduction in rates increases the net earnings, so let us break the system down into some of its components.

TABLE II, this page, shows the rates of return for the system, as taken from Table I, together with similar figures for the three major divisions into which the TVA auditors separate the municipalities, to wit:

Memphis, Chattanooga, Knoxville, and Nashville
Other municipalities
The REA's

None of the four large municipalities changed its residential schedule from the basic B-1 rate but each is today operating on the same residential schedule on which it commenced when taken over by the TVA. With no rate changes the record of these four large municipalities shows a declining rate of return.

The other municipalities show an even greater decline but here there may be the possibilities of the effect of recent rate cuts, requiring further study, as shown in later tables.

The co-operatives show a better record in that the rate of return has improved in the last ten years, but it is not a picture which would encourage any private investment in these systems, with net earnings before interest and income taxes

DISTRIBUTORS OF TVA POWER
TABLE II

PER CENT RETURN ON NET INVESTMENT
BY GROUPS

Year	*System*	*4 Large Munic.*	*Other Munic.*	*Co-ops*
1947	12.3%	14.2%	19.0%	4.4%
1948	11.2	14.5	16.2	3.9
1949	9.3	13.1	14.3	3.2
1950	8.2	11.4	13.6	2.7
1951	7.6	10.5	12.7	2.4
1952	7.2	9.8	11.7	2.6
1953	7.1	9.4	11.5	2.5
1954	7.0	9.0	11.3	2.8
1955	7.6	9.6	11.6	3.3
1956	7.4	9.0	11.0	3.6
1957	6.6	8.0	9.3	3.4
1958	6.6*	7.6*	9.0	3.6
1959	6.2†	7.6†	8.3	3.8

* Less Memphis steam plant.
† Less Memphis investment and earnings.

of only 3.8 per cent on the original cost less depreciation. However, in fairness to the co-ops it should be pointed out that this return would be substantially higher (5.7 per cent for 1959) if TVA did not require the co-ops to include a substantial amount of income as "Contributions to Capital" instead of as "Earnings."

Some Revealing Statistics

TABLE III, this page, shows a comparison of the rate of return on the four large municipal systems, none of which has decreased its residential rates. Chattanooga seems to have maintained its rate of return, while the others have declined to about one-third their 1947 figures. This may be because their properties were undervalued when taken over. Or it may be due to the fact that S. R. Finley, who is an excellent utility operator and who has been managing the Chattanooga system these many years, has been able to do a better job than the operators in the other cities.

The startling figure in this table is that while Memphis has exactly the same residential rate as each of the other three cities, the annual kilowatt-hours per customer are about one-third of those in the other three towns. This definitely shows that low electric rates, by themselves, do not result in high kilowatt-hour sales per customer. The answer, so we understood from the late Major Allen who operated the Memphis system, was that Memphis owned a gas system as well as an electric and did not encourage electric heating, even though the electric rate was the same as elsewhere in the TVA area with a four-mill block for 1,000 kilowatt-hours.

TABLE IV, page 802, gives a comparison of four groups of municipalities comprising 58 of the distributors of TVA

DISTRIBUTORS OF TVA POWER
TABLE III
FOUR LARGEST MUNICIPALITIES

Year	*Chattanooga*	*Knoxville*	*Nashville*	*Memphis*
	Per Cent Return on Net Investment			
1947	8.5%	18.5%	19.8%	13.9%
1948	11.6	15.8	16.1	14.6
1949	12.4	13.3	13.7	12.9
1950	12.9	12.6	12.5	9.1
1951	13.3	11.5	10.5	8.7
1952	11.5	9.9	10.4	8.4
1953	11.6	8.2	10.6	8.1
1954	11.9	8.3	10.0	7.1
1955	12.2	8.7	9.3	8.9
1956	11.9	8.7	9.1	7.6
1957	10.2	6.8	8.0	7.7
1958	11.5	7.2	7.8	
1959	11.1	6.7	6.4	
	Residential Sales Per Customer			
1949	4,560	3,960	4,250	1,670
1959	12,250	10,740	11,010	3,530*

* 1958.

TVA DISTRIBUTORS
TABLE IV

Comparison of Rate of Return
24 Municipalities on Basic Rate B-1 } No Rate Changes
10 Municipalities on R } 1949 to 1959
12 Municipalities on R-1 }
And 12 Municipalities Cutting Rates between 1950 and 1955

Year	*B-1*	*R*	*R-1*	*B-1 to R & R-1*
1947	14.3%	15.4%	14.6%	26.4%
1948	12.7	10.2	15.5	23.7
1949	12.0	7.0	12.8	21.4
1950	11.3	7.3	12.6	20.9
1951	11.1	7.6	11.8	18.1
1952	10.7	7.5	10.8	13.7
1953	10.9	7.9	10.4	13.0
1954	10.8	6.5	9.4	12.7
1955	11.0	7.3	9.8	12.6
1956	11.0	7.3	8.8	11.2
1957	10.0	6.4	7.8	9.2
1958	10.4	6.9	8.1	9.2
1959	9.8	7.0	8.0	8.8
		Residential Kilowatt-hours Per Customer		
1949	2,600	3,000	3,700	3,000
1959	7,600	8,000	9,000	8,600
		Residential Revenue Per Customer		
1949	$43.00	$42.00	$41.00	$44.60
1959	83.00	80.00	78.00	81.60
		Average Number of Customers		
1949	3,800	2,800	4,000	4,400
1959	5,700	4,300	6,000	6,900

power. The remaining municipalities were not included because they are either recent acquisitions or have made recent changes in their rates and have not had time to bring their net earnings up through increased sales per the TVA theory.

The first group of 24 municipalities has remained on the basic B-1 residential rate since first taking TVA power.

The next group comprises 10 municipalities which changed to Rate R more than ten years ago, this Rate R being about 10 per cent cheaper than the basic rate.

The third group comprises 12 municipalities which have been on Schedule R-1 for more than ten years, R-1 being about 20 per cent cheaper than the basic schedule.

The last group comprises 11 municipalities which changed from the basic rate to Schedule R about midway in the ten-year period and one municipality which changed from the basic rate to R-1. Thus in this group we have from four to nine years of operation under the new rates which should have been time enough to show the results which it is claimed are brought about by reducing rates. The picture does not show this but instead shows that the municipal groups on the lower rates are earning a lower per cent return than the group which has not done any rate cutting.

The lower per cent net earned by the R group may be due to some extent to the fact that these are smaller communities with only 4,300 customers, as shown in the table.

What the Figures Really Mean

It will be noted that, as predicted, the lower rate groups have much higher sales per customer but it will also be noted that this did not result in more revenue per customer, thus the municipalities have been in the position of supplying a lot more kilowatt-hours for less gross revenue which will mean less net revenue, regardless of efficiency.

Table V, this page, shows statistical data for the groups in Table IV on per unit bases.

As predicted, the lower rates have re-

TVA DISTRIBUTORS
TABLE V
STATISTICAL DATA BY GROUPS
1949-59

		Group B-1	*Group R*	*Group R-1*	*Group B-R*
Per Kwh. Sold					
Revenue	1949	14.5	12.2	9.8	12.5
	1959	11.0	10.7	8.7	9.4
Oper. Exp.	1949	2.70	2.52	1.70	2.13
	1959	1.92	2.06	1.50	1.55
Net Earn.	1949	4.5	2.4	2.2	4.1
	1959	2.5	1.8	1.4	1.8
Per Customer					
Investment	1949	$210.00	$210.00	$170.00	$160.00
	1959	370.00	370.00	340.00	360.00
Oper. Exp.	1949	12.20	12.80	13.00	13.40
	1959	20.60	22.30	22.20	19.40
True Load Factor: Based on Maximum Demand					
	1953	47%	44%	48%	49%
	1959	41	39	43	43
Load Factor Used by TVA in Billing: Based on Average Demand					
	1953	56%	54%	58%	58%
	1959	57	55	58	59

sulted in much lower operating expenses per kilowatt-hour. The operating expenses used were those reported by the TVA, exclusive of purchased power, taxes, and depreciation.

However, what was not predicted, but is shown, is that the net earnings per kilowatt-hour have decreased substantially and, as shown on the previous table, the kilowatt-hours have not increased enough to offset the decrease in net earnings per kilowatt-hour.

The table also shows the tremendous increase in investment per customer that has been necessary to supply the added kilowatt-hours and the necessary additional expense per customer required for operation. This is in spite of the fact that many new customers have been added which should have compensated for the increase in expense due to inflation.

At the bottom of Table V are shown the load factors of the various groups. The data for this were obtained from the report of the TVA to the Federal Power Commission for the years '53 and '59 which are the only ones we had at hand. These reports show the maximum kilowatt demand for each of the municipalities for the year, as well as the average monthly demand. For any utility generating its own requirements, the maximum demand for the year is the controlling demand, for the utility must supply sufficient generating, transmission, and distribution capacity to take care of this demand as well as having some reserve. Dividing the demands into the total kilowatt-hours purchased gives the load factors.

For example, for the B-1 group the 1953 load factor was 47 per cent and by

TABLE VI

EFFECT OF INCREASING PURCHASE PRICE THAT TVA CHARGES THE DISTRIBUTORS OF ITS POWER BASED ON 1959 TVA REPORT

Group	*Total Municipalities*	*Number with Net Earnings Wiped Out with Increase of*		
		1.5 Mills	*2 Mills*	*2.5 Mills*
R-1	27	21	27	27
R	41	19	37	41
B-1	31	7	13	20
Total	99	47	77	88
Co-ops*	51	26	43	49
System	150	73	120	137
	Percentages			
R-1		78%	100%	100%
R		46	90	100
B-1		23	42	65
Co-ops*		51	84	96
Total		49%	80%	91%

Average Increases in Cost Per Kilowatt-hour to Wipe Out All 1959 Net Earnings

3 Largest Municipalities	1.45 Mills
Other Municipalities	1.65
All Co-operatives*	1.45
System	1.53 Mills

*All but four of the co-operatives are on B-1 and 38 of them also collected a surcharge, not reported as revenue, on the first 100 kilowatt-hours.

1959 it had been reduced to 41 per cent. Similarly, all the other groups show decreases.

It will be seen from this that if a utility sells to a distributing system and the load factor decreases, it should base its rates on the annual load factors and receive more money. However, the rates on which the TVA sells to the municipalities are based on the monthly load factors, as given at the bottom of the table, and as a result the average purchase price of power to the municipalities has not increased but in fact shows slight decreases for many municipalities.

Thus, while the municipalities have been demanding more and more peak power from the TVA, they have not been paying for it, which has helped them keep down their rates and show earnings.

A NUMBER of years ago a congressional committee investigating the TVA brought forth the conclusions that in spite of all its advantages of cheap hydro, allocation of cost to nonpower operations, and failure to pay interest or income taxes, the TVA's wholesale rates were not more than one or two mills per kilowatt-hour lower than the rates at which private utilities were able to sell their wholesale power.

One or two mills seems very small, but when such an increase is applied to the purchase cost of the energy bought by the distributors of TVA power, it will have the effect shown in Table VI, page 804.

Here again we have an illustration of the failure of low rates to bring increased net earnings, since an increase in the purchase price wipes out the net earnings of the low rate municipalities (R-1) much sooner than the next lowest Rate R, and the basic rate municipalities B-1. For instance, an increase in cost of 1.5 mills per kilowatt-hour would wipe out all the net earnings (before interest deductions) of 21 of the 27 municipalities on R-1 but only 19 of the 41 on R and only seven of the 31 on the basic Rate B-1.

Thus, it is obvious that the so-called success of the municipal distributors depends to a very great extent on the subsidized price at which energy is sold to them by the TVA.

If the municipalities supplied by TVA were asked to pay the average rate of 6.5 mills charged by the South Carolina (Santee Cooper) Public Service Authority, more than 110 of the 150 distributors would be using red figures for net earnings, substantial losses instead of profits.

TABLE VII, page 806, lists the four large municipalities together with the 24 included in group B-1, all of which are still on the basic rates. TVA advertises that more than half of the distributors have cut their rates. But almost 70 per cent of TVA's customers are still on the basic rates because the larger municipalities have not done any cutting.

From this table it will be noted that the rate of return apparently does not depend on the kilowatt-hour sales per customer. There seems to be no relation between sales per customer and net earnings. Net earnings appear to depend more on the size of the cities, the efficiency of operation, and the amount of industrial business compared to total revenue.

Similar data for the ten municipalities

TABLE VII
MUNICIPALITIES ON B-1
1949 TO 1959
1959 DATA

City	*Total Number of Customers*	*Res. Kwh. Per Customer*	*% Return On Net Investment*
Memphis, Tenn.	174,300*	3,530*	7.8%*
Nashville, Tenn.	124,750	11,010	6.4
Chattanooga, Tenn.	82,140	12,250	11.1
Knoxville, Tenn.	78,000	10,740	6.7
Bristol, Tenn.	13,910	10,390	12.7
Greenville, Tenn.	13,280	8,250	10.9
Weakly Co., Tenn.	9,470	7,660	5.4
Bristol, Va.	8,550	9,450	10.4
Lawrenceburg, Tenn.	8,530	6,970	10.4
Lexington, Tenn.	7,810	5,560	8.8
Bessemer, Ala.	7,700	4,770	12.8
Sevierville, Tenn.	7,430	7,900	11.6
Newport, Tenn.	7,110	6,790	14.2
Pulaski, Tenn.	6,590	7,240	7.6
Athens, Tenn.	6,580	5,700	8.5
Rockwood, Tenn.	5,520	11,780	10.2
Bolivar, Tenn.	4,450	5,630	5.7
Holly Spgs., Miss.	4,350	3,780	6.6
Benton Co., Tenn.	4,200	7,570	7.8
Sweetwater, Tenn.	3,120	6,920	10.4
Armory, Miss.	2,240	4,090	9.1
Benton, Ky.	1,260	11,940	8.4
Erwin, Tenn.	4,210	7,550	12.6
Jellico, Tenn.	3,080	3,240	6.8
Okolona, Miss.	2,790	4,740	2.3
Tarrant City, Ala.	1,810	4,920	8.0
Muscle Shoals, Ala.	1,200	13,810	10.2
Somerville, Tenn.	850	8,550	7.7

* 1958.

on R and the 12 on R-1 are shown on Table VIII, page 807, and for the 12 municipalities cutting rates between 1950 and 1955 on Table IX, page 808.

On Tables X to XVI we have shown data for individual municipalities, samples of the various groups.

TABLE X, page 808, gives the data for Knoxville and it tells about the same

story as the group tables. The number of customers has increased 80 per cent in the last fifteen years. The gross investment has increased 520 per cent. The sales have increased 370 per cent but the net earnings have increased only 130 per cent. Thus, the return before interest has dropped from 17½ per cent down to 6.7 per cent. Part of this is probably due to the distribution system being undervalued when it was turned over by the TVA to the city of Knoxville. When Knoxville had to spend its own money, its rate of return went down fast.

HERE is shown a demonstration of the drop in average price per kilowatt-hour as sales increased, 15 per cent in the case of Knoxville. Also, the increased efficiency shows up in the drop of 10 per cent in operating expenses per kilowatt-hour. But the failure of the low rates to live up to their promise shows up in the drop of 51 per cent in the net earnings per kilowatt-hour.

Note also that the increases in residential sales per customer of 400 per cent, and added customers of 80 per cent, have brought about an increase in investment per customer of more than 200 per cent, an increase of 130 per cent in the operating expenses per customer, and an increase in the total expenses per customer of 150 per cent.

The table also shows the small amount of increase that would be required in the purchase price of electricity to wipe out all the net earnings of the municipality,

TABLE VIII
MUNICIPALITIES ON R
1949 TO 1959
1959 DATA

City	*Total Number of Customers*	*Res. Kwh. Per Customer*	*% Return On Net Investment*
Athens, Ala.	10,920	7,980	4.1%
Dickson, Tenn.	7,960	6,370	4.0
Tullahoma, Tenn.	4,450	11,740	9.0
Cullman, Ala.	4,150	9,580	10.6
Lebanon, Tenn.	4,100	9,360	12.5
Ripley, Tenn.	3,300	4,190	9.0
Scottsboro, Ala.	2,470	11,770	9.0
Mt. Pleasant, Tenn.	2,170	8,150	8.7
Brownsville, Tenn.	1,960	3,600	11.0
Water Valley, Miss.	1,360	5,070	8.1

MUNICIPALITIES ON R-1
1949 TO 1959
1959 DATA

Florence, Ala.	18,910	8,980	6.3%
Decatur, Ala.	10,060	11,570	9.0
Maryville, Tenn.	7,930	9,600	7.3
Clarksville, Tenn.	7,740	11,870	7.7
Columbus, Miss.	7,390	5,410	9.2
Tupelo, Miss.	5,770	6,550	13.1
Starkville, Miss.	2,810	4,910	11.1
Guntersville, Ala.	2,800	9,380	8.4
Fayetteville, Tenn.	2,680	9,660	7.5
Lewisburg, Tenn.	2,530	8,840	7.1
Hartsell, Ala.	1,890	8,180	9.0
Trenton, Tenn.	1,550	7,500	12.2

TVA DISTRIBUTORS
TABLE IX
MUNICIPALITIES CUTTING RATES BETWEEN 1950 AND 1955
1959 DATA

		Number of Customers	*Res. Kwh. Per Customer*	*% Return on Net Investment*
6/30/54	Huntsville, Ala.	32,020	7,890	8.4%
11/ 1/50	Lenoir City, Tenn.	7,770	9,390	8.2
7/10/51	Murfreesboro (R-1), Tenn.	7,390	11,740	12.0
7/15/51	McMinnville, Tenn.	6,620	9,550	7.6
1/ 1/51	Harriman, Tenn.	6,240	8,350	6.0
9/ 1/51	Mayfield, Ky.	4,530	7,480	11.1
1/15/51	Shelbyville, Tenn.	4,400	10,270	11.1
2/15/51	Murray, Ky.	3,350	11,790	11.9
1951	Loudon, Tenn.	3,120	8,000	6.1
1952	Russelville, Ala.	2,610	8,400	8.2
1950	Russelville, Ky.	2,310	5,100	13.1
1950	Franklin, Ky.	2,050	3,920	7.3
	Group	82,410	8,500	8.8

only 1½ mills per kilowatt-hour in 1959 compared to double that amount back in 1944. If Knoxville were buying power from the public power system of the South Carolina Public Service Authority at its average selling price of 6.5 mills, Knoxville would show a deficit of $1.40 million instead of earnings of $2.27 million in 1959.

WHEN TVA took over the Bristol system, its auditors determined that the original cost less depreciation of the Bristol plant was $700,000 less than the

TABLE X
KNOXVILLE
RESIDENTIAL SERVICE SINCE 1938 ON B-1

	1944	*1949*	*1954*	*1959*
Number of Customers	42,500	56,500	68,900	78,000
Gross Investment—Millions	$ 7.15	$14.33	$27.37	$44.53
Net Investment—Millions	5.61	11.60	21.74	34.05
Kwh. Sales in Millions	300	509	935	1,408
Gross Earnings—Millions	$ 3.27	$ 5.62	$ 9.24	$13.04
Net Earnings—Millions	.98	1.55	1.81	2.27
Per Cent on Net Investment	17.5%	13.3%	8.3%	6.7%
Per Kwh. Sold—Mills				
Gross Earnings	10.9	11.0	9.9	9.3
Operating Expense*	1.9	2.4	2.0	1.7
Total Expense	7.6	8.0	8.0	7.7
Net Earnings	3.3	3.0	1.9	1.6
Per Customer—Dollars				
Gross Investment	$169.00	$254.00	$397.00	$571.00
Operating Expense*	$13.60	$21.70	$28.00	$31.00
Total Expense	$54.00	$72.00	$108.00	$138.00
Kwh. Sales—(Residential)	2,130	3,960	7,080	10,740
Increased Purchase Cost in Mills Per Kwh. to Wipe Out Net Earnings	3.1	2.8	1.8	1.5

*Excluding purchased power, taxes, and depreciation.

amount paid for it. This $700,000 was therefore set up as an acquisition adjustment, to be written off year by year out of the net earnings after paying operating expenses, etc. This $700,000 was not included in the figures of Table XI below.

By 1947 about $82,000 of this amount had been written off, so that the net plant, including this item, was $618,000 more than shown, or a total of $1,308,000, and the per cent earned on this amount was 12.5 per cent. The return in 1959 would depend on the extent to which the property had depreciated. The books of the municipality show that on June 30, 1959, a remainder of $123,000 still remained to be amortized. If this is included in net plant, the return for 1959 would have been 12.3 per cent.

Someone might call attention to the high rate of return, 12.7 per cent, which might look good even to a private utility operator, for it would net better than 6 per cent even after income taxes were deducted. There are several reasons for this:

1. Bristol was taken over by the TVA in 1945, so there is still considerable of the old property in operation, even though the TVA auditors have erased its cost from the books. Similar high rates of return show up for other properties bought at the same time.

Note the 5 per cent drop in five years. This means that on the additional $2 million of investment in these last five years, the added net earnings have been only $60,000, or 3 per cent.

2. The subsidized price of purchased power. An increase of two mills per kilowatt-hour in the cost of power would reduce the per cent earned to less than 2 per cent.

TABLE XI
BRISTOL, TENNESSEE
TVA SERVICE STARTED JUNE 30, 1945
ALL RESIDENTIAL SERVICE ON B-1

	1947	*1949*	*1954*	*1959*
Number of Customers	7,220	8,990	11,700	13,910
Gross Investment—Thousands	$984	$1,464	$2,869	$4,790
Net Investment—Thousands	690	1,119	2,292	3,706
Kwh. Sales in Millions	29.8	46.4	115.4	194.7
Gross Earnings—Thousands	$438	$652	$1,285	$1,903
Net Earnings—Thousands	164	274	411	471
Per Cent Return	23.7%	24.6%	17.9%	12.7%
Per Kwh. Sold—Mills				
Gross Earnings	14.7	14.1	11.1	9.8
Operating Expense*	2.6	1.9	1.8	1.4
Total Expense	9.2	8.2	7.6	7.4
Net Earnings	5.5	5.9	3.6	2.4
Per Customer—Dollars				
Gross Investment	$140.00	$160.00	$245.00	$345.00
Operating Expense*	$10.60	$10.00	$17.40	$19.70
Total Expense	$38.00	$30.60	$74.50	$103.00
Kwh. Sales (Residential)	2,030	3,270	6,900	10,390
Increased Purchase Cost in Mills Per Kwh. to Wipe out Net Earnings	5.0	5.5	3.3	2.3

*Excluding purchased power, taxes, and depreciation.

TABLE XII

ATHENS, ALABAMA

JUNE 1, 1934

URBAN CUSTOMERS ON R SINCE 1946

RURAL CUSTOMERS ON B-1

	1944	*1949*	*1954*	*1959*
Number of Customers	3,250	6,340	9,180	10,920
Gross Investment—Thousands	$533	$1,591	$2,901	$4,759
Net Investment—Thousands	403	1,357	2,304	3,622
Kwh. Sales in Millions	9.1	23.0	52.1	97.9
Gross Earnings—Thousands	$150	$326	$670	$1,099
Net Earnings—Thousands	34	69	102	147
Per Cent Return	8.5%	5.1%	4.4%	4.1%
Per Kwh. Sold—Mills				
Gross Earnings	16.6	14.2	12.9	11.2
Operating Expense*	3.7	2.7	2.9	2.1
Total Expense**	12.9	11.2	10.9	9.7
Net Earnings	3.7	3.0	2.0	1.5
Per Customer—Dollars				
Gross Investment	$160.00	$250.00	$320.00	$440.00
Operating Expense*	$10.20	$9.80	$15.70	$19.00
Total Expense**	$36.00	$40.50	$62.00	$87.00
Kwh. Sales (Residential)	1,820	3,180	4,890	7,980
Increased Purchase Cost in Mills Per Kwh. to Wipe Out Net Earnings	3.2	2.6	1.7	1.4

*Excluding purchased power, taxes, and depreciation.
**Including purchased power, taxes, and depreciation.

TABLE XIII

DECATUR, ALABAMA

CHANGED FROM B-1 TO R-1 JULY, 1944

	1944	*1949*	*1954*	*1959*
Number of Customers	5,310	6,880	8,270	10,060
Gross Investment—Thousands	542	1,280	2,414	3,848
Net Investment—Thousands	434	1,022	1,917	3,010
Kwh. Sales—Millions	48	107	160	272
Gross Earnings—Thousands	$457	$798	$1,219	$1,934
Net Earnings—Thousands	161	193	207	270
Per Cent Return	37.1%	18.8%	10.8%	9.0%
Per Kwh. Sold—Mills				
Gross Earnings	9.5	7.5	7.6	7.2
Operating Expense*	1.09	.92	1.00	.97
Net Earnings	3.3	1.8	1.3	1.0
Per Customer—Dollars				
Gross Investment	$102.00	$186.00	$292.00	$384.00
Operating Expense*	$9.90	$14.30	$19.50	$26.10
Kwh. Sales (Residential)	2,360	4,820	7,830	11,570
Increased Purchase Cost in Mills Per Kwh. to Wipe Out Net Earnings	5.0	1.7	1.25	1.0
Rate of Return				
Last Year on B-1—1944				37.1%
First Year on R-1—1945				23.0%

*Excluding purchased power, taxes, and depreciation.

TABLE XII, page 810, shows the results in Athens, Alabama, which changed partly to the lower Rate R in 1946. As shown, its earnings situation did not improve.

The average price per kilowatt-hour sold dropped from 16.6 mills in 1944 to 14.2 mills in 1949, partly on account of the rate cut and partly because of increased sales. This last element continued to bring down the average price until it reached 11.2 mills in 1959.

Note that net earnings per kilowatt-hour dropped from 3.7 mills to 1.5 mills during the 15-year period.

Table XIII, page 810, shows the results in Decatur, a member of the third group, which changed its rates in 1944 to R-1.

The 1944 books do not show any acquisition adjustment for this city, but an amount of $131,000 shows up in 1949.

Here we have very large increases in investment (almost 600 per cent) and sales (almost 500 per cent), but only an increase of 67 per cent in net earnings, so that the return drops from 37 per cent to 9 per cent.

Table XIV, this page, shows the similar results for the city of Huntsville, which changed from the basic Rate B-1 to Rate R in June, 1955, and is therefore included in the fourth group in Table V. It will be noted that Huntsville took a drop in per cent earned from 16.8 per cent in 1955 to 12.7 per cent in 1956 as the result of the rate reduction, but it also shows that instead of recouping this return as predicted by TVA, the return has continued to go down until it was only 8.4 per cent for 1959.

TABLE XIV

HUNTSVILLE, ALABAMA

CHANGED FROM B-1 TO R JUNE, 1955

	1944	*1949*	*1954*	*1959*
Number of Customers	9,630	15,480	22,330	32,020
Gross Investment—Thousands	1,495	2,847	5,403	12,795
Net Investment—Thousands	833	1,951	4,003	10,279
Kwh. Sales in Millions	85	121	199	403
Gross Earnings—Thousands	$845	$1,344	$2,160	$3,775
Net Earnings—Thousands	284	494	727	862
Per Cent Return	34.0%	25.3%	18.2%	8.4%
Per Kwh. Sold—Mills				
Gross Earnings	9.9	11.1	10.9	9.4
Operating Expense*	1.14	1.30	1.42	1.21
Net Earnings	3.3	4.1	3.7	2.1
Per Customer—Dollars				
Gross Investment	$155.00	$184.00	$242.00	$400.00
Operating Expense*	$10.10	$10.20	$12.80	$15.20
Kwh. Sales (Residential)	2,170	3,050	4,660	7,890
Increased Purchase Cost in Mills Per Kwh. to Wipe Out Net Earnings	4.8	3.8	3.3	2.0
Rate of Return				
Last Year on B-1—1955	—	16.8%		
First Year on R—1956	—	12.7%		

*Excluding purchased power, taxes, and depreciation.

TABLE XV below gives the case of Jackson, Tennessee, which was not included in any of the other groups because it made two rate reductions, one in 1947 and the other in 1956. Each time, the rate of return took an immediate drop which was not recouped.

Jackson's figures deserve a little scrutiny. It is observed that

1. The number of customers almost doubled in the 15-year period.

2. The investment went from $1 million to almost $5 million.

3. Sales increased to six times the 1944 figure.

4. Net earnings went from $197,000 to only $217,000, a 10 per cent increase. Out of this the city gets its bond interest and its profit.

Table XVI, page 813, shows the result in Tupelo, Mississippi, the original TVA town where Chairman Lilienthal promised that the new, low power rates would mean much to the city, and especially to the textile mill which was located there. It was predicted that the town and surrounding area would prosper on account of TVA rates.

Tupelo no longer has a textile mill and Lee county, in which it is located, shows

TABLE XV

JACKSON, TENNESSEE
OPERATED ON BASIC RATE B-1 UNTIL JULY 1, 1947
OPERATED ON R—JULY, 1947, TO APRIL, 1956
OPERATED ON R-1—APRIL, 1956, TO DATE

	1944	*1949*	*1954*	*1959*	*15-year Growth*
Number of Customers	7,710	10,560	12,760	14,470	88%
Gross Investment—Thousands	$1,005	$1,649	$3,098	$4,712	370%
Net Investment—Thousands	643	1,261	2,400	3,441	430%
Kwh. Sales—Millions	29.6	72.9	113.6	178.5	500%
Gross Earnings—Thousands	$ 457	$ 774	$1,172	$1,546	240%
Net Earnings—Thousands	197	230	284	217	10%
Per Cent Return	30.6%	18.2% 3 years on R	11.9% 8 years on R	6.3% 3 years on R-1	
Per Kwh. Sold—Mills					
Revenue	15.5	10.6	10.3	8.7	—44%
Operating Expense*	2.1	1.8	1.6	1.4	—32%
Net Earnings	6.6	3.2	2.5	1.2	—82%
Per Customer—Dollars					
Gross Investment	$130.00	$156.00	$243.00	$326.00	150%
Operating Expense*	8.20	12.80	13.80	17.10	110
Kwh. Sales (Residential)	1,360	2,340	3,550	5,080	270
Increased Purchase Cost in Mills Per Kwh. to Wipe Out Net Earnings	6.1	2.9	2.4	1.15	
Rate of Return					
Last Year on B-1—1947	27.8%				
First Year on R—1948	18.4				
Last Year on R—1956	10.9				
First Year on R-1—1957	6.6				
Latest Year on R-1—1959	6.3				

*Not including purchased power, taxes, and depreciation.

a loss of population from 1940 to date.

Of significance is the fact that residential sales per customer in Tupelo, in spite of the lowest rate having been in effect longer than in any other city, amounted only to 6,550 kilowatt-hours per customer in 1959, about one-half that of some of the other cities. Yet Tupelo shows a better rate of return than most of the other cities, even the larger ones with high sales per customer.

Credit for the better showing cannot be given to the low rates, since the necessary intervening figure of high sales per customer does not appear.

TABLE XVI

TUPELO, MISSISSIPPI
CHANGED TO RATE R PRIOR TO 1944
CHANGED TO RATE R-1 JULY 1, 1944

	1944	*1949*	*1954*	*1959*
Number of Customers	2,620	3,770	4,710	5,770
Gross Investment—Thousands	$293	$606	$1,014	$1,631
Net Investment—Thousands	176	424	706	1,198
Kwh. Sales in Millions	11.8	22.6	41.9	79.8
Gross Earnings—Thousands	$155	$246	$428	$744
Net Earnings—Thousands	47.2	60.2	82.7	157.3
Per Cent Return	26.9%	14.2%	11.7%	13.1%
Per Kwh. Sold—Mills				
Gross Earnings	13.1	10.9	10.2	9.3
Operating Expense*	2.0	1.6	1.8	1.4
Net Earnings	4.0	2.7	2.0	2.0
Per Customer—Dollars				
Gross Investment	$112.00	$161.00	$216.00	$283.00
Operating Expense*	$9.00	$9.60	$15.50	$19.60
Kwh. Sales (Residential)	1,910	2,640	4,090	6,550
Increased Purchase Cost in Mills Per Kwh. to Wipe out Net Earnings	3.7	2.4	1.8	1.8

*Exclusive of purchased power, taxes, and depreciation.

Conclusions

It is evident from the foregoing that the theory of cutting rates to increase sales and decrease operating expenses per kilowatt-hour is correct. But that is only part of the picture. One must inquire: What does the rate cut do to the net revenue, the per cent earned on the money invested?

Were an electric utility to follow the TVA theory of using unit costs as a gauge of success, it might give away free a large block of kilowatt-hours to each customer. This will undoubtedly cause per customer use to zoom to heights hitherto unreached and thereby reduce operating costs per kilowatt-hour to the nadir of nothingness, resulting in maximum "efficiency of operation," according to TVA theory. It may land some operators in the poorhouse, but think how happy the customers and the statisticians will be.

This conclusion may be dismissed by some as ridiculous but the distributors of power in the Tennessee valley have come very close to doing just that thing. They buy power at average prices between four and five mills per kilowatt-hour and sell 1,000 kilowatt-hours to each residential customer at four mills per kilowatt-hour. Rates B-1, R, and R-1 each contain that block. Thus, they are selling their own services for nothing more or less than nothing.

The TVA "Facts" booklet also calls attention to the low rates of the privately owned utilities, which are TVA's nearest neighbors. The inference is that they have been taught how to cut rates and make money by TVA's example. As a member of the Southeastern Rate Committee in 1927 and 1928, this writer can prove that our private electric companies in the Southeast started our rate-cutting program six years before TVA came into existence and that in the ten years prior to 1934 we made more progress in rate making than we have been able to do in the twenty-six years since 1934, when the government got into the business. Moreover, the experience of the TVA distributors, as covered herein, definitely shows that cutting rates, even with subsidized power, has not resulted in increased net earnings in per cent of the money invested, which is the only true gauge of successful operation.

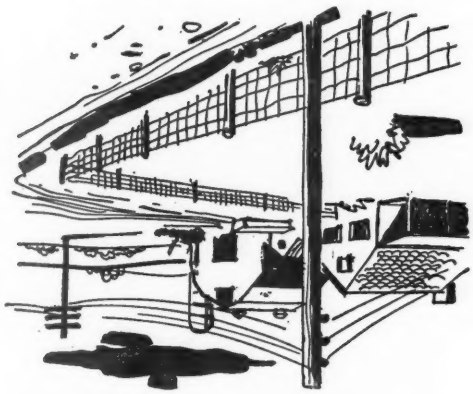
As previously stated, some of the municipalities were excluded from the study so far because of recent rate changes. An examination of their records shows the same general trend:

> Net earnings in per cent of investment were decreasing before the rate cuts were made, took a sharp cut at that time, and continued to decrease afterward.

The reader is asked to bear in mind that we are not discussing whether any municipality had made or is making a fair return on its property, but merely the question of whether low rates increase net earnings.

Judging by TVA's own records, the answer is definitely "NO."

Toward Greater Freedom



By the Honorable DAVID A. HAMIL*
Administrator, Rural Electrification Administration

It is the objective of the Rural Electrification Administration to help every REA co-op achieve a sound fiscal and operational strength so that it can function as an independent enterprise. Today most REA-financed systems are in good shape. Many are both able and willing to invest an appreciable amount of their own funds in extensions and additions to plant. By and large, co-ops desire freedom from dependence on Uncle Sam and are willing to take their chances along with private businesses.

On May 11, 1960, the Rural Electrification Administration observed its twenty-fifth anniversary with ceremonies in Washington. We had much to celebrate. Since its creation in 1935, REA has financed some one thousand rural electric systems, most of them co-operatives. Today these organizations serve slightly more than half of all the electrified farms in the United States, along with two million other rural establishments.

On the whole, their financial condition is strong; their repayment record is excellent; the service they provide ranks with the very best.

Besides these material accomplishments, we also were proud that REA has moved consciously and deliberately in the direction of greater freedom of decision and action by its borrowers. As co-operatives have matured and gained experience, REA assistance in a variety of fields has progressively diminished. This is of vital importance to any program which involves both our federal government and local organizations, for it is one of our convictions in America that local people and groups should look after their own affairs when able to do so.

*For additional personal note, see "Pages with the Editors."

Like many big plans in a big country, REA began haltingly. There were preliminary explorations; there were false starts. The agency was formed in the depression to provide new jobs. Its first funds were emergency relief funds; REA was given permission to give the money away if it would put men to work.

THE late Morris L. Cooke, REA's first Administrator, felt strongly that REA's primary purpose should be the extension of rural lines. During 1935, he managed to free the fledgling agency from the unemployment relief restrictions which had been placed upon it. Before any grants were made, he transformed REA into a lending agency.

In the beginning, it had seemed to Cooke that electric power companies would be the logical ones to apply for REA loans and to extend power to rural people. After all, the companies had the personnel, the equipment, the experience to do the job. But response from power companies was disappointing.

Later, Cooke observed that "before December (1935) . . . it became apparent that the industry was not going to use even a substantial portion of the funds available for rural electrification, and farm organizations of a co-operative character forged to the front as the principal borrowers under the REA program."

On May 20, 1936, the Congress made it official by passing the Rural Electrification Act. Among other things, the act directed the REA Administrator to give preference in making loans to "states, territories, and subdivisions and agencies thereof, municipalities, peoples' utility districts, and co-operative, nonprofit, or limited-dividend associations." It also required that REA be administered on a nonpartisan basis.

Farmers Spur REA Co-ops

IT is important to remember that the emergence of co-operatives as the principal borrowers of REA funds came about as a result of demands of farm people. Individually, and collectively through their farm organizations, they insisted on their right to combine and to furnish themselves with the electric power they needed so desperately. They worked for this right nationally, and they worked for it locally, as they sought co-operative enabling acts in their state legislatures. Rural electrification was born because millions of rural people wanted it.

The co-operative which serves my own cattle ranch in Colorado was in no way a creation of Uncle Sam. The Highline Electric Association, at Holyoke, was started by a dozen or so farmers and ranchers, friends and neighbors, who literally worked night and day to organize our co-op, to sign up consumers, to plot in where the first lines would go. They contributed their time, their energies, and frequently their own money, without any hope or aim of compensation. Rural electrification was their dream; it was their show.

Despite the local identity of rural electric co-operatives, it was clear that REA would have to do more for its borrowers than lend them money. Though farmers were good businessmen, they were amateurs in the electric business. Some assistance was essential to safeguard the security of the government loans. For their part, the farmers knew they needed help, and they asked for it.

Help Needed and Help Given

IN a totalitarian nation, or in one dominated by a powerful bureaucracy, the sort of assistance which REA offered in those early days would have been continued and extended, until the co-ops were indeed wards of the government. This did not happen to REA and its borrowers, and I doubt very much if it could have happened in a country with our traditions of individual freedom. The farm people who founded the co-ops knew the difference between assistance and domination. They asked for help, but they would not have tolerated dictatorship.

REA's first policy statement on its relationship with its borrowers was signed by the Administrator on June 8, 1950. It was in effect long before that official action, however, and it has since been reaffirmed by successive Administrators. It is in effect today, and it applies to REA's ten-year-old telephone program as well as to the electric program.

The policy states that REA "shall render certain technical advice and assistance to its borrowers" to protect the security of the government loans. It also states, however, that this help "shall progressively diminish" as borrowers gain in experience and maturity.

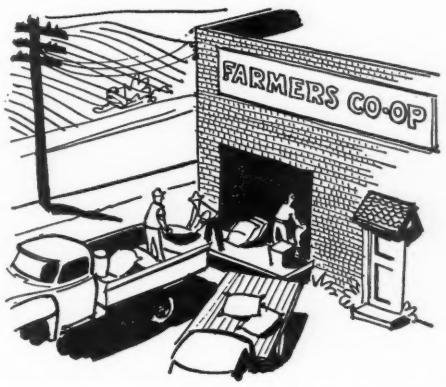
Co-operative Independence Is REA Goal

THE underlying objective of REA, the policy points out, is to move as quickly as possible toward a situation "in which every borrower possesses the internal strength and soundness to guarantee its permanent success as an independent local enterprise." This goal is in keeping with the fact that each borrower is an independent corporate body, locally owned and locally controlled, and operating under the laws of the state in which it resides.

A POLICY is meaningless, of course, unless implemented with deeds. When the first systems were built, REA insisted on approving nearly all construction work orders, including most extensions to connect individual consumers. During the forties, the agency eliminated 75 per cent of its work order review task by permitting single-phase extensions up to 5,000 feet without REA approval. Today, borrowers may proceed with all member extensions and single-phase construction without prior REA approval. Also, REA engineers once inspected all completed work order construction on borrowers' systems.

Today, a consulting engineer employed by the borrower does the inspecting and certifies to REA that the construction meets acceptable standards.

There was a time when REA staffers audited all accounts of borrowers. In the early fifties, the sounder co-ops were re-



quired to employ certified public accountants for most audits.

Paper work has been cut back. Co-ops used to make monthly statistical reports to REA; today most make them quarterly.

Processing of additional loans for borrowers who had proved their financial responsibility was speeded with a short-form procedure. The agency no longer requires that co-ops submit minutes of all monthly board meetings.

Two REA Loan Programs

PARTLY as a result of these changes, REA today runs two loan programs—electric and telephone—with fewer employees than it used to take to run the electric program alone. In 1949, before the telephone program began, it took 1,076 man-years to operate the rural electrification program. In 1959, it took only 1,018 man-years to run both programs: 501 man-years for the electric program, 517 man-years for the telephone.

REA has fewer field representatives. It is not uncommon for a co-op to go for six months or longer today without receiving a visit from an REA representative. When a field representative does have something to discuss with a borrower, he makes an appointment. He does not make a call unannounced.

The major task of management training and development has been assumed by the co-operatives themselves. Through their own dues-supported national trade association and through statewide associations, they have inaugurated their own training schools and seminars.

Taking a broad view of the past twenty-five years, REA has attempted to help its borrowers when help was needed, and to withdraw that help when each borrower was able to help itself. Upholding REA's judgment in eliminating many of its supporting activities is the splendid repayment record of its electric borrowers. On January 1, 1960, total payments to the government exceeded $1.2 billion. This figure includes $397.1 million in interest and more than $823.4 million in principal. The balance of payments made ahead of schedule stood at $154.1 million. Only one electric borrower was delinquent in payments.

REA Co-ops in Good Shape

PERSONALLY, I believe that REA-financed systems are ready to take steps toward even greater self-reliance and independence. We now urge borrowers to invest their own general funds—where available for the purpose—in extensions and additions to plant. At the end of fiscal 1959, electric systems reported that they had already made such investments with $225 million of general funds.

One borrower which already has taken long strides toward greater independence is the Talquin Electric Co-operative, at Quincy, Florida. Its manager, Leon E. Weaver, has worked out his own financial forecast and plan for the future. He selected many sources and consultants, of which REA was but one. Now Weaver operates according to his plan, revising it as needed. On the basis of his own estimates, he has informed REA that he does not plan to call on the agency for additional loans in the foreseeable future. He is confident that he can handle necessary system improvements by investing Talquin's own general funds in plant. There will be more co-ops like Talquin Electric in the years to come.

Interest Rate Adjustment Needed

IN addition to investing their own funds in plant, I believe that co-ops should ask Congress to adjust the present 2 per cent interest rate on REA loans to reflect the cost of money to the government. This cost is presently much greater than 2 per cent.

I also feel that it is not too early for REA borrowers to talk about developing a mutually owned financing institution, modeled along the lines of the Farm Credit Administration. A bank of their own would assure them of a permanent supply of capital to meet future needs. These are not matters which REA can decide. Both the structure of REA and its interest rate are determined by the Congress. But some day, I feel certain, the changes will come, and REA's borrowers will emerge from the experience even stronger and more independent.

There is a price to freedom, of course, and co-operatives will have to pay that price if they are to stay in business. More than one million newcomers have come onto rural lines within the last decade; last year alone 139,000 new consumers were hooked up, and, in the continental United States, five out of six of these new users were not farmers. It is safe to say that a large proportion of them have not heard of either the REA loan program or the co-operative form of organization. Still others believe that rural lines are owned by the government.

Information Program Needed

THE co-ops face the risk that these new consumers will fail to appreciate the value of the organizations of which they are now member-owners. Last year, two co-ops—one in Arizona and one in New Jersey—were sold to other power suppliers, largely because members failed to understand what they owned.

The answer to an uninformed membership must come from the co-operatives themselves. Many have adopted vigorous member relations programs. In Manassas, Virginia, for example, the Prince William Electric Co-operative has filmed a motion picture to show new consumers how it operates. It has added a round of community meetings to the lone annual meeting which its bylaws require. It sends members a newspaper. Its employees seize every opportunity to address civic and business groups in the area.

All this public relations is hard work, as is keeping up modern management methods and making long-range plans, but Prince William does not seem to mind. Most co-ops guard jealously their freedom of action. They are justifiably proud of their increasing lack of dependence on Uncle Sam, and they are willing to take their chances along with other private enterprises.

"THE vanishing respect for private property is intimately related to our laxity about the integrity of money. A free society can only stand on firm and durable foundations."

—ALFRED SCHAEFER,
Chief general manager, Union Bank of Switzerland.

How Soon Electric Heating?

By G. T. KELLOGG*

The electric industry has done an about-face on electric home heating. While still concerned about how some of the problems it presents will be solved, it will welcome any system that will do an efficient job for its customers because it realizes electric heating will help level its high summer air-conditioning peaks. The heat pump may prove to be the best all-round answer. Should some other method be found superior, however, the electric industry will promote it. It is estimated that by the end of 1970 more than four million electric space-heating customers will be served by electric utilities.

ELECTRIC heating, latest darling of the electric utility industry, which has blossomed out this year as the subject of a full-blown promotional campaign, has not achieved even its present status without a struggle in which its adversaries were not only competing fuels but, particularly in the early years of its foothold-gaining, some of the power-producing companies themselves.

*Department of public relations, Air-Conditioning and Refrigeration Institute, Washington, D. C. For additional personal note, see "Pages with the Editors."

Today, however, the utilities all appear to be almost foursquare behind it, and flanking them are the manufacturers of electric heating equipment, the contractors who install it, and all other segments of the industry.

A SPOKESMAN for one large manufacturer of electrical heating equipment voiced the hopes, if the still not too established convictions, of the industry recently when he pointed out that ". . . electric heating will undoubtedly form the veri-

table backbone of utility growth for several decades ahead. . . ."

None of us knows what new equipment for power use is likely to be developed for several decades ahead, but it is unquestionable that the most of the electric industry looks upon electric heating of homes, apartments, and commercial and industrial establishments in the next few years as a terrific consumer of its kilowatt-hour output, although it is not certain what types of equipment may become dominant in the conversion of electrical energy to space heating—nor does it care too much, so long as this equipment uses the product of its generating plants.

In this connection, the vice president of the Detroit Edison Company (E. O. George) told a meeting of the National Warm Air Heating and Air Conditioning Association a few months ago, the electrical industry will support any system of heating that represents good satisfaction and value to its customers—so long as it is electric. The industry, he said, disclaims any desire or intention to promote a "system"—only to promote the use of its product—electric current.

Further along in this article we shall consider the various types of equipment now commercially available for converting electrical energy into heat; for the moment, however, it is apropos to consider what has brought about this relatively new espousal of electric heating, for the same factors can and probably will be governing in any arrival at the rosy future predicted for it.

There is no question but that the present promotional and selling campaign for electric heating is but the latest phase in a running power play (no pun intended) that insinuated itself into the utility field when the "mechanical refrigeration" cycle was first applied as a means for cooling spaces in which people live and work. Paradoxical as it may appear, mechanical cooling is the perhaps unintentional sire of the electric heating drive as we see it all about us today.

As recently as eight or nine years ago, many electric utilities not only did not want electric heating business—they recommended against it, as most readers of Public Utilities Fortnightly will remember. Typical of the attitudes of that time, and their reconsideration, is that of the Virginia Electric & Power Company.

"After World War II," said Tom D. Fulford, vice president of Vepco, "many of the small, speculatively built houses in Norfolk, Newport News, and Alexandria communities of our service area were equipped with so-called radiant heat in the form of glass panels as the primary source of home heating. Several building contractors had discovered that installation of this form of heating equipment was less expensive than the more conventional types, and would help keep building costs down. . . ."[1]

Because of consumer dissatisfactions resulting from this type of heating, and because of the fact that the added heating load seemed to come at the same time as the system peak, Vepco and undoubtedly other utilities urged "discouragement" of proposals for electric heating, particularly in homes.

However, along came air conditioning

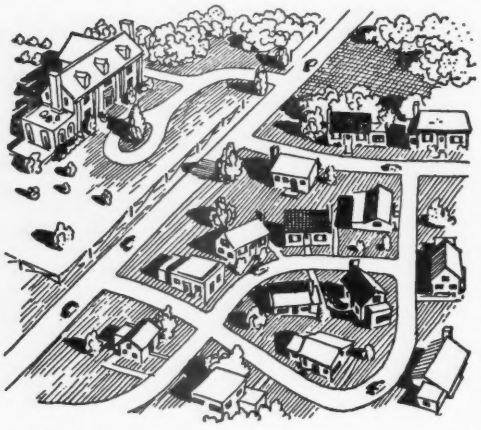
[1] "Air Conditioning and Its Electric Requirements," by G. T. Kellogg, Public Utilities Fortnightly, June 6, 1957, Vol. 59, No. 12, p. 829.

—by leaps and bounds, no less—and the utilities began to experience summer peak loads which exceeded previous winter peaks—as a matter of fact, during the past couple of years, extremely hot days have overtaxed the power supply in some large cities to the extent that urgent requests have gone out by radio, television, telephone, and other means of communication, seeking a cut down in the load.

Winter *versus* Summer Load

BEFORE this occurred, however, the electric power companies became aware of their problem—that of using in winter the capacity which must be developed to carry the summer peak load. Thus was the electric heat campaign conceived—if not actually born during the past two or three years.

Furthermore, and while this may be a secondary factor it is definitely a factor, the gas industry, watching the electric load increase in summer and at the same time watching the electric power industry casting about for winter uses for its increased output, fostered the development of summer air-conditioning equipment using gas as a fuel, meanwhile seeking to maintain its ascendancy in the winter heating business.



These, then, are the factors behind the changed attitude of the electric power industry toward space heating, as well as the reasons why gas is continuing to develop its air-conditioning equipment as well as its heating units.

This article, however, concerns primarily developments in the electric heating field; perhaps a roundup of the gas industry's activities will be in order later.

Many opinions concerning the development, requirements, types, rates, and future of electric heating were expressed at the first National Electric House Heating Symposium in Chicago in March this year —itself a spearhead for the new and growing interest in electric heating. Among these are the declarations that electric heating may well cause a "revolution in home building," because of the fact that adequate insulation is a must; that it is changing (or will change) the face of the air-conditioning industry, through development of heat pumps for year-round use; that it will provide (as already noted) the backbone for future growth of the electric power industry.

High Spots of Electric Heating

SPACE precludes coverage of all these opinions and reports of fact herein, but we can look at a few of them and possibly experience a "feel of the future" in this dynamic field:

"It is apparent," Norman Strunk, vice president of the United States Savings and Loan League, was quoted, "that the home

building industry is on the verge of some major breakthroughs in technology. The availability of new materials and equipment can mean a revolution in home building. Take one possible development for example—electric heating, which could become the prevailing and most economical method of heating. It may be that, almost overnight, houses with gas or oil furnaces will be subject to a substantial penalty from economic obsolescence. It will mean that houses without adequate wiring will suffer a distinct decline in value because electric heating will require more insulation and wiring."

ALONG the same line, a number of speakers noted the need for additional insulation, and cited the all-weather comfort standard for electrically heated and air-conditioned homes. Among these was Paul W. Emler of American Electric Power Service Corporation, who said:

> Let me put the importance of insulation and the size of the future market in proper perspective by briefly restating the case for electric heating and electric air conditioning. It is important, I think, to recognize that in the past few years—five years at most—electric heating has been installed in about half a million American homes, and is being installed today at a far greater rate than we anticipated only two or three years ago. In the next twenty years I think it is reasonable to expect that at least one-quarter of all the dwelling units in the country will be electrically heated. Air conditioning, too, is catching on in all parts of the country, not just in the South and Southwest. Julian Zimmerman, commissioner of the Federal Housing Administration, has said: "Air-conditioning has become such an important part of modern living that, in a few years time in many parts of the country the home without it will probably be considered obsolete."

Referring to the comfort standard mentioned above, Mr. Emler pointed out that it "has been submitted for acceptance to individual manufacturers of heating equipment, insulation, glass, and air-conditioning equipment, to trade associations such as National Electrical Manufacturers Association, National Association of Home Builders, National Mineral Wool Association, Air-Conditioning and Refrigeration Institute, National Warm Air Heating and Air Conditioning Association, and Edison Electric Institute, as well as a number of individual electric utilities. Many acceptances have already been received and the standard is being considered by other individual companies and associations who have not made decisions."

The Cost Hurdle

UTILITIES and engineering people at the symposium agreed that one of the big obstacles in selling electrical heating is operating cost; some of them went into detail as to competitive kilowatt-hour rates. Because of this, it has been pointed out, there is on the part of some utilities, still some hesitancy about going "whole hog" for electric heating.

"The peaking characteristics of electric space heating . . . are the major uncertainty," according to Robert Morse Wood of Ebasco Services Incorporated. "And the big question is: How will increasing

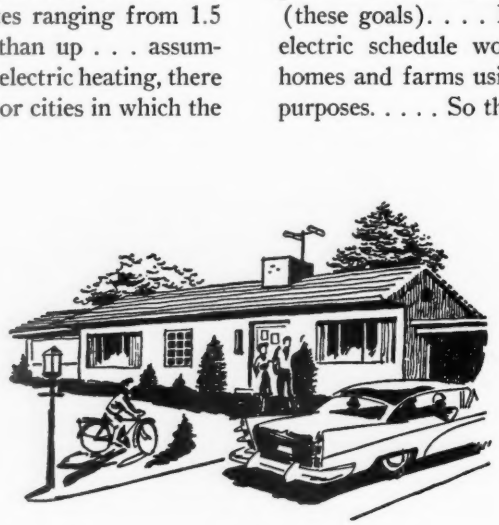
saturation affect the load curve and annual load factor of the electric system as a whole. On the one hand, some predict disaster, with a minimum saturation—10 to 15 per cent—and on the other, some foresee that as the electric system grows with the addition of other appliance loads and increased use of present appliances as well as electric heating, the electric heating load will loom less large and less foreboding. Revenues per customer will increase quickly without a corresponding increase per customer in costs to serve. The character of this combined load of the future will be no different from present system loads, they reason, that the best course of action is to get on with the job and solve the problems as we come to them."

Problems of Rates

On the precise question of setting rates, Leland Olds of Energy Research Associates asserted that "a realistic attempt to capture the space-heating market will offer all-electric schedules with final incremental rates ranging from 1.5 cents down, rather than up . . . assuming the most efficient electric heating, there are a number of major cities in which the 1.5-cent rate would be competitive without taking into account suburban and rural areas. . . . In general, all-electric home rate schedules should be offered which will encourage future home builders to plan for electric heat with the concommitant building insulation as the most economical, as well as the most satisfactory, provision for family comfort. Perhaps the answer will be Cadillac homes at Ford prices. . . .

"The first step is setting the goal or objective. It is, in fact, implicit in my subject when expanded to include all electric living and farming. Assuming 10,000 kilowatt-hours per year for consumption by the all-electric home other than space heating, with about 14,000 kilowatt-hours per year for space heating, with about 6,000 kilowatt-hours per year added for farm operations, we may set present goals at 24,000 kilowatt-hours per average all-electric nonfarm home and 30,000 kilowatt-hours for the average farm home.

"The second step is to determine the price or rate schedule necessary to reach (these goals). . . . By its terms the all-electric schedule would be available to homes and farms using electricity for all purposes. . . . . So the space-heating load



would be available at the incremental rate for all consumption in excess of 500 kilowatt-hours per month. This incremental rate, therefore, must be set with an eye to the competition of other sources of heat. . . ."

To illustrate his point, Mr. Olds presented the following table showing for 20 cities in the country an approximation as to what would be required of the electric systems if they "really wanted to get out and compete." The house he used as an example in this table is an actual 25,000-cubic-foot house, located in Kennewick, Washington. It is, he pointed out, well-insulated, with a calculated heat loss of 31 kilowatts at a design temperature of 0 degrees Fahrenheit.

COST OF HEATING 25,000-CUBIC-FOOT HOUSE

With heating season of 5,715 degree-days requiring 144 million Btu's heating comparing gas heating and electric pump heating needing 15,190 kilowatt-hours of electricity.

City	*Fuel Cost of Gas Heat Per MM Btu**	*Per Season*	*Equivalent Per Kwh.*
Boston	$1.80	$259.20	1.71¢
Washington	1.65	237.60	1.56
New York	1.60	230.40	1.52
Philadelphia	1.56	224.64	1.48
Seattle	1.58	227.52	1.50
Baltimore	1.55	223.20	1.47
Scranton	1.50	216.00	1.42
Portland, Ore.	1.46	210.24	1.38
Minneapolis	1.18	169.92	1.12
Chicago	1.16	167.04	1.10
Detroit	1.01	145.44	0.96
St. Louis	1.01	145.44	0.96
Atlanta	0.92	132.48	0.87
Cincinnati	0.89	128.16	0.84
Pittsburgh	0.79	113.76	0.75
Cleveland	0.79	113.76	0.75
Los Angeles	0.78	112.32	0.74
Houston	0.71	102.24	0.67
San Francisco	0.66	95.04	0.63
Kansas City	0.65	93.60	0.62

*From *Gas Facts*, 1958, assuming its figure for heating efficiency.

These are but a few of the fields explored and opinions expressed at the symposium in March, but they are eloquent proof of the industry's almost wholehearted desire for electric heating and at the same time its hesitancy as to some of its aspects and its lack of background information for policy and rate making. All of these things will have to be worked out as the field "shakes down" and production of additional output for electrical heating—and its still-growing parent, air conditioning—ceases to take on the aspect of an unpredictable Frankenstein.

Benefits Must Be Sold

THE publication *Metal Products Manufacturing* recently did a round-up type article on "Electric Heating: What, Where, and How." "Ten years ago," the publication points out, "electricity was struggling for recognition as a legitimate member of the family of heating fuels. Its main adversary was tradition—the idea of heating a home with electricity was strange to the public, and a strange idea is accepted slowly at best.

"Also, as most manufacturers of electric heating equipment are ready to admit, the cost of heating with electricity was, and in most cases still is, higher than traditional heating methods. So the job was to acknowledge the cost factor and concentrate on educating the public to the advantages of electric heating. 'You pay more but you get more' was the theme.

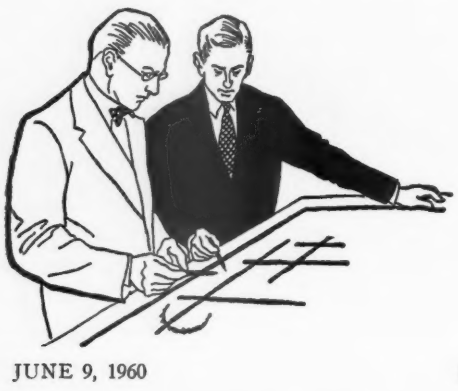
"Today, electric heating equipment manufacturers and electric utility companies are continuing the campaign on behalf of electricity as a heating fuel, and they have succeeded to the extent that an estimated one million homes in the United States are heated electrically.

"Of course, convincing people that a flame is not necessary to produce heat was

not the whole problem. Manufacturers had to develop new, more versatile equipment to meet the demands they were creating. . . .

"Electricity is now a solid 'junior member' of the family of heating fuels, and further progress appears certain. Its exact status in the coming years depends on the degree of public acceptance, the improvement of existing methods, and the innovation of new electric heating ideas. Probably the major consideration in weighing the future of electric heat is cost. Intelligent promotion can stress the functional virtues which may make electric heat desirable to the consumer, but the economics of the subject cannot be ignored. The electric heat industry's task will be easier when and if the cost gap between electricity and fossil fuels is narrowed."

(A somewhat anomalous corollary to this outlook is the declaration by one of the industry's outstanding utility executives, who said, "The public is demanding" electric heat as a "magic symbol of modern living, of convenience, of comfort, safety, and of laborsaving. The heating customer," he said, "thinks of it the same way he does of automatic transmission, power brakes, or power steering in his automobile—none of these things costs less but they all benefit the customer—and obviously he has become quite willing to pay for this value. In the face of this growing consumer enthusiasm for better living, we foresee a time not too far distant when electric heat will be the standard against which all older systems are measured.")



Various Electric Heat Systems

As pointed out earlier, there are a number of types of equipment available for producing space heat from electricity. It may be well here to explore these and their relationship with the industry's existing load and the history behind this load.

Four basic principles cover the transfer of heat: conduction, radiation, convection, and forced convection. The actual "types" all fit into one or more of these categories. Let us take a look at the principles themselves.

Convection: This transfer is defined as a transfer of heat or thermal energy in fluids (liquid, gas, or air) when relatively warm particles are mixed with cooler ones. Using the familiar heated radiator as an example, the air around the radiator becomes warm, expands with a resultant decrease of density, and rises to be replaced by cold air, setting up a natural circulation in the room. Any heating surface (in electric heaters the resistance coil, the grille, a flue-type heated surface, or the reflector) becomes a convector. Convected heat becomes a convector. Convected heat serves to warm cooler objects by coming in contact with them. Any surface that has been heated by radiation to a temperature above surrounding air temperature becomes a convector.

Forced convection: This is the same basic convection heat transfer, accelerated by use of a fan. Since more air is moved directly over the source of heat, the heat is literally extracted from the heat source.

Conduction: This is the transfer of heat through matter. When heating one end of a metal bar, the heat travels progressively to the other end by conduction transfer. If a hot iron were placed in direct contact with a cold iron, the transfer to the cooler body is by conduction. Conduction transfer occurs in solids, to some extent in liquids, and to an almost negligible degree in air or gases.

Radiation: Radiant energy travels in straight lines until intercepted or absorbed by some body or object and converted to heat. It behaves in the same manner as light. To a degree, it will pass through glass without perceptibly heating the glass. Air containing water vapor or dust will intercept and absorb radiant heat. It is in this manner that the atmosphere receives part of its heat by radiation from the sun.

ELECTRIC heating systems can be classified by the following types: electric furnaces, electric boilers, electric duct heating, radiant panels, convection heaters installed in walls with either gravity or forced fan circulation, baseboard units, unit resistance heaters suspended from ceilings or walls, and heat pumps.

Electric furnaces are used in essentially the same way as other furnaces, with the exception that the air in the plenum is heated by electricity before delivery by ducts to the areas to be heated. These furnaces, like most fossil-fueled furnaces, can, by installation of a cooling coil, be converted to serve as a central air conditioner in summer. Another type of electric furnace stores heat generated during off-peak periods when rates may be lower.

Electric boilers operate on the same principle as that employed with other fuels.

Floor furnaces include those devices that recess beneath the floor and discharge warm air level with the floor or through registers in a wall.

Electric duct heating consists of resistance units installed directly in the air distribution of a a self-contained or remote air conditioner. Use of individual room duct heaters located immediately before the outlet diffuser in a room and controlled in the room by a thermostat permits a room-to-room flexibility.

Radiant panels include all those that heat large areas of ceiling, floor, or wall. Heating systems using resistance cable embedded in plaster ceilings or cement floors may also be included in this classification.

CONVECTION HEATERS installed in walls with either gravity or forced fan circulation were originally manufactured as wall insert units for bathrooms and isolated rooms, but now they are available in a variety of styles. In the radiant type of convection heater, a ceramic tube is employed to support the resistance coil and create an additional convecting surface in the form of a heated "chimney." Objects within the scope of radiation are warmed.

With forced-convection heaters, a fan is used to force air over the heating element. In a heater of this type, transfer is almost entirely by convection.

Baseboard heating units employ a large amount of radiant plus convection transfer. The heating element of a metal baseboard unit is mounted horizontally, and

is generally of a finned-type construction to increase the convection transfer.

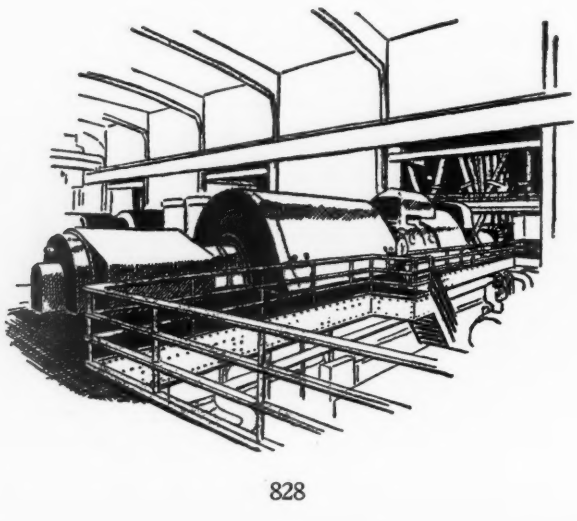
Unit resistance heaters are available for use as heaters suspended from walls or ceilings. Portable units are also available for special purposes.

HEAT PUMPS stand today as the most widely used and possibly the most advanced in development among the equipment being used in electric-powered central ducted air-conditioned systems. The heat pump can be used in a year-round system with a predictable demand for electric current, and, because it is a year-round consumer of kilowatt-hours, stands high in the preference of many utility officials, despite the disclaimer quoted earlier, to the effect that the utilities were uncommitted as to type—"just so it uses electricity."

Among the most outspoken heat pump proponents in the utility field is James M. Foreman of Duke Power Company, who contends: "The electric utilities will sink or swim with the heat pump. Where they go with the amazing, versatile, proven electric heat pump is up to the manufacturer, its sales and service allies."

While sale of heat pumps was largely confined to the southern states for some years, they are gradually moving northward, particularly industrial applications, and some homes are reported using them even in the Dakotas and Minnesota area of the Northern States Power Company. A great deal of development work has gone into the heat pump in the past few years, with the result that units are being built with a greater heating capacity than in the past, with auxiliary resistance heating cutting in when outside temperatures drop below a certain point—as new heat pumps are developed and their heating efficiency improved, the point at which this resistance heat cuts in has been dropping lower. Thus the manufacturers are seeking to meet the challenge of the utility industry as voiced by Mr. Foreman.

As of now, it is estimated that there are no more than about 80,000 heat



pumps operating in the country, but a forecast for 1960 made by the *Air Conditioning, Heating & Refrigeration News,* averaging estimates of manufacturers, sees sales of some 40,000 (both residential and commercial) in 1960, and beyond that the estimates vary widely—the only unanimity being that there will be larger increases each year for some time to come.

On the other hand, estimates of non-heat-pump electric-heat installations range from 600,000 to 750,000 as of the end of 1959, and forecasts are heard that 1960 will "produce a minimum" of 100,000 new electrically heated homes. Extended forecasts indicate that by the end of the current decade (1970) some 4 million electric space-heating customers will be served by U. S. electric utilities—including heat pumps; and if their improvement and acceptance continue at the pace that has been set, they will have a share in this rosy future. Typical of the growth of the heat pump is this tabulation of manufacturers' shipments since 1953:

Year	*Shipments*
1953	986
1954	1,900
1955	3,551
1956	4,746
1957	9,244
1958	17,000
1959	35,000

WHILE this discussion is intended to cover only what is available today, how the utilities are handling it, and to take a brief look into the future, it would be incomplete if thermoelectricity were omitted. More than 100 companies are spending large sums on research and development in this field, some of them predicting that it may be the heating (and cooling) source of the future.

Thermoelectricity, which makes possible the direct conversion of heat into electricity or electricity into heat with no intermediate moving parts, is based on the operation of the solar generator, which concentrates the sun's rays on a particular area to create temperatures of thousands of degrees Fahrenheit. Such heat concentrations can be focused on one end of a metal bar, the other end being refrigerated.

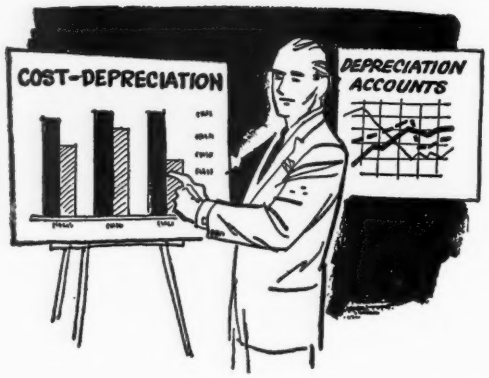
The tremendous difference in temperature sets up a flow of electrons comparable to that created by an electric generator.

A variation of the same principle has resulted in the development of a small refrigerator that has no moving parts. The cooling effect is obtained by applying electrical power to two bars of dissimilar material which are coupled at both ends. One end of the combination becomes warm as the other cools off. The same principle is applied for heating.

One manufacturer already is making a ceiling bathroom heater based on the thermoelectric principle. Another company is working on a forced-air furnace whose heat would provide the power for the forced-air system. There would be no heat loss.

EVEN with the widespread research and developmental work in process, do not look for an overnight boom in the use of thermoelectricity. It may take a decade or more to get the principle into widespread application. But it is something that could very well influence the electric heating and air-conditioning industry, and may well be tucked in the back of the mind as a future possibility.

Regulatory Treatment of Accelerated Depreciation



By HARRY A. POTH, JR.*

The manner of accounting for, and reporting to stockholders and the public, the tax deferrals arising from the use of accelerated depreciation[1] has again become a current problem for the electric utility industry. The immediate cause is Accounting Series Release No. 85, entitled "Statement of Administrative Policy Regarding Balance Sheet Treatment of Credit Equivalent to Reduction in Income Taxes," issued by the Securities and Exchange Commission on February 29, 1960. The secondary, but interrelated, reason is the series of show-cause orders issued by the Federal Power Commission, during the past year, to some ten electric utilities subject to its jurisdiction, relating to the treatment of deferred taxes in their reports to stockholders and other material distributed to the public.

THE Securities and Exchange Commission's statement of policy dates back to hearings held before it on April 8 and 9, 1959. The original notice, issued December 30, 1958, stated that the commission was considering the adoption of a policy that any financial statement filed with it which designates as earned surplus, or includes as a part of equity capital, credits arising from accounting for reductions in income taxes for various items—including those under §§ 167 and 168 of the Internal Revenue Code—will be presumed "to be misleading or inaccurate despite disclosure contained in the certificate of the accountant

*Attorney, New York, New York. For additional personal note, see "Pages with the Editors."

[1] "Accelerated depreciation" is used throughout to denote both accelerated amortization, under § 168, and liberalized depreciation, under § 167, of the Internal Revenue Code.

or in footnotes to the statements." Although the language of the notice was broad enough to apply to any material tax reductions resulting from a difference between book and tax accounting, it was quite evidently aimed at accelerated depreciation.

IN response to the invitation contained in the notice, the SEC received several hundred letters of comment in support of, and in opposition to, the proposed administrative action. Such comment came not only from electric, and to some extent gas, utility companies but from a number of industrial concerns, accounting firms, and associations and regional societies of security analysts. At the 1959 hearings the major participants included representatives of a number of electric utility companies and accounting firms, for the most part in strong opposition to the proposal, and a member of the staff of the American Institute of Certified Public Accountants, and a spokesman for one of the country's major accounting firms in support of the proposal. The staff of the commission took no part in the proceedings.

In finally adopting the statement of policy on February 29th (but applicable only to financial statements filed with it after April 30, 1960), the commission considerably improved upon the original notice as the following excerpts from Accounting Release No. 85 indicate:

> . . . This statement of policy is designed to advise all interested persons of the commission's views as to the presentation in financial statements filed with the commission of the credit arising *when* deferred tax accounting is employed[2] (p. 1).
>
> * * * *
>
> . . . To correct the resultant distortion in periodic net income after taxes, it is therefore *necessary* to charge income in earlier years with an amount equal to the tax reduction and to return this amount to income in subsequent years when the amount charged for financial statement purposes exceeds the amount deducted for tax purposes. It is our understanding that such deferred tax accounting is in accordance with generally accepted accounting principles (p. 2).

Does It Make Deferred Tax Accounting Mandatory?

THE last quotation, considered alone, would certainly seem to make deferred tax accounting mandatory in all situations where the differential between book and tax figures is material. However, it is immediately followed by a footnote reference which cites Accounting Research Bulletins Nos. 42, 43, and 44 (revised) of the American Institute of Certified Public Accountants and specifically states that "the commission raises no question as to the propriety of the exception" contained in paragraph 8 of Bulletin No. 44 (revised). This exception exempts utility companies from practicing deferred tax accounting where deferred taxes are not allowed for ratemaking purposes and "it may reasonably be expected" that the potential increased income taxes in the future will be allowed in rate determinations at that time.

As many readers doubtless know, some

[2] Emphasis is supplied throughout unless otherwise indicated.

question exists as to what kind of rate orders, or other indications of future policy, by state commissions[8] are required to qualify a company for this exception, and some extremists have taken the view that it is impossible to "reasonably expect" such treatment in future rate cases.

THIS possible mandatory aspect is in direct contrast to the position taken by the Federal Power Commission, nearly two years ago, in adopting Order No. 204 which, contrary to the position taken by the FPC's staff, declared that deferred tax accounting is not mandatory (Order No. 204, Mimeo. ed., page 6). The immediate question with respect to the SEC's position is further confounded by the first quotation above which would suggest that the statement of administrative policy applies only *when* the particular company involved is practicing deferred tax accounting.

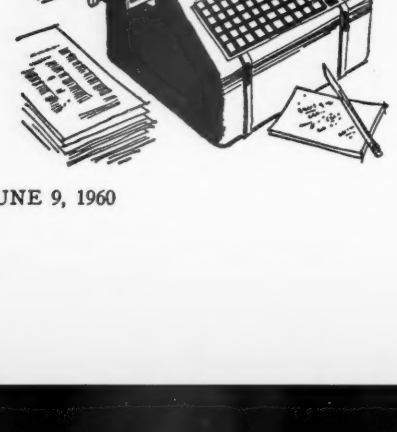
Release No. 85 continues to say:

. . . Because of the interrelationship between income taxes and depreciation, the commission is of the view that in the earlier years the charge equivalent to the tax reduction should be treated either (1) as a provision for future taxes in the income statement with a corresponding credit in the balance sheet to a nonequity caption such as a deferred tax credit, or (2) as additional depreciation in the income statement with a corresponding addition to the accumulated provision for depreciation in the balance sheet. In the commission's view it is improper to charge income with an item required for the proper determination of net income and concurrently to credit earned surplus.

A number of comments indicated that, should the commission take the foregoing position, it should be limited to matters connected with depreciation and amortization or, if not so limited, any additional items embraced within this principle should be clearly specified.

It is the commission's view, however, that comparable recognition of tax deferment should be made in all cases in which there is a tax reduction resulting from deducting costs for tax purposes at faster rates than for financial statement purposes (pp. 3, 4).

[8] See, for example, the doubts expressed by the Illinois commission as to the allowance of future higher taxes in the Union Electric Company case, 29PUR3d 77 (1959).



Clarification of Accounting Release 85

THE paragraph quoted immediately above has also raised a major question of interpretation. On its face, it would seem to apply (except where the amounts are immaterial) to every case where a tax reduction results from de-

ducting any cost for tax purposes faster than for book purposes. This, apparently, would include, for example, differentials in straight-line depreciation rates as well as those arising with respect to intangible well-drilling costs.

It is understood, however, that the staff of the SEC did not intend that this paragraph of Release No. 85 should be applied so broadly and the situation has been clarified by the issuance of Accounting Release No. 86 on April 12, 1960. The release quotes the text of a letter from the commission's chief accountant to Carman G. Blough, director of research, American Institute of Certified Public Accountants, which states:

> It was not the commission's intention by the publication of this release [No. 85], stating an administrative policy regarding balance sheet treatment of the credit equivalent to the reduction in income taxes when deferred tax accounting is employed, to make mandatory the use of deferred tax accounting beyond the requirements of generally accepted accounting principles.

It is also understood that, in the opinion of the commission's chief accountant, the "generally accepted accounting principles" referred to are those contained in the Accounting Research bulletins of the American Institute of Certified Public Accountants relating to tax reductions resulting from deducting costs at faster rates for tax, than for financial statement, purposes.[4]

The concluding pertinent paragraphs of Accounting Release No. 85 provide:

> While some accounting firms that appeared before the commission urged that it was appropriate to designate as a part of earned surplus the credit arising from deferred tax accounting despite the opinion of the committee on accounting procedure, the commission disagrees. Moreover, the fact that there may be some authoritative support for different methods of classifying this deferred tax account does not preclude the commission from determining for the future the manner in which the item should be classified in financial statements filed with it. In fact, as enunciated by the commission in Accounting Series Release No. 4, dated April 25, 1938, the question of authoritative support is pertinent only where the position of the commission has not previously been published in official releases (p. 5).
>
> Arguments have been advanced, particularly on behalf of public utility companies, to the effect that from analytical and rate-making viewpoints the treatment prescribed herein might have undesirable results upon investors and consumers. However, it is entirely appropriate that regulatory agencies treat the accumulated credit arising from deferred tax accounting in whatever manner they deem most relevant to their purposes (pp. 5, 6).

[4] There are only three bulletins of the institute dealing with the question. Bulletin No. 44 (revised) refers specifically to liberalized depreciation and Chapter 9C of Bulletin No. 43 refers specifically to amortization of emergency facilities. Only in § B of Chapter 10 of Bulletin No. 43 is there a general discussion of income tax differentials and this clearly states that the "section does not apply where there is a presumption that particular differences between the tax return and the income statement will recur regularly over a comparatively long period of time."

Effect on Financial Analysis

THE last sentence is quite similar in approach, as we shall see later on, to that of the Federal Power Commission in its Order No. 204 of May, 1958. However, the SEC is somewhat more forthright with respect to its own views as to how the deferrals should be treated for the purpose of financial analysis. A footnote to the above-quoted paragraph from Release No. 85 states quite flatly:

> So far as this commission is concerned, since it believes that classifying the item as a component part of common stock equity is misleading for financial statement purposes, it does not intend to consider the item as a part of common stock equity for analytical purposes, although it may give consideration to the item as one of a number of relevant factors in appraising the overall financial condition of a company. The commission, of course, does not have jurisdiction over rate making, although under the Public Utility Holding Company Act of 1935 it is concerned with the interests of consumers. Alleged adverse results as to investors and consumers are no different from those complained of whenever any requirement designed to assure financial stability is imposed (p. 6).

In addition to these directives contained in Release No. 85, the Securities and Exchange Commission, on the same day, undertook to amend Rule 28 under the Public Utility Holding Company Act. Rule 28 had for many years provided that no registered holding company, or subsidiary, could publish financial statements inconsistent with its book accounts. As amended, such inconsistency is permitted where authorized or required by the commission's rules, "statement of administrative policy, or otherwise."

Possible Contest of SEC's Action

As of the date this article was completed no judicial action had been begun to contest the validity of the SEC's

action in issuing Accounting Release No. 85 or in amending Rule 28. It would seem, however, that substantial question exists as to both.

Does the commission have statutory authority, for example, to compel the use of deferred tax accounting with respect to liberalized depreciation, except to the extent of the limited exemption provided by Paragraph 8 of Accounting Research Bulletin No. 44, discussed above? This question is of particular pertinence with respect to those companies subject to its jurisdiction only by reason of having filed registration statements under the Securities Act of 1933, which is essentially a federal "blue-sky" law.

Again, can it overnight, by the mere promulgation of a statement of policy, make misleading accounting methods previously approved by a large segment of the most respected opinion in the accounting profession and as to which reasonable men certainly could differ, despite the fact that full disclosure is made?

A further question would also seem to exist in the case of companies subject to the Public Utility Holding Company Act of 1935 which, for example, have received orders from their state public service commissions authorizing the crediting of the tax deferrals to a restricted surplus account, because § 20(b) of that act provides that "in the case of the accounts of any company whose methods of accounting are prescribed under the provisions of any law . . . of any state, the rules and regulations or orders of the commission in respect of accounts shall not be inconsistent with the requirements imposed by such law or any rule or regulation thereunder."

The fact that Accounting Release No. 85 was issued as a statement of policy, rather than in the form of a rule or order, and that its text states that "It is not intended to direct or establish any system of accounts or to specify the manner in which a particular item shall be recorded on the books of the reporting companies" (page 1), suggests that the commission may also have some doubts on the subject.

Practical Effect of Release 85

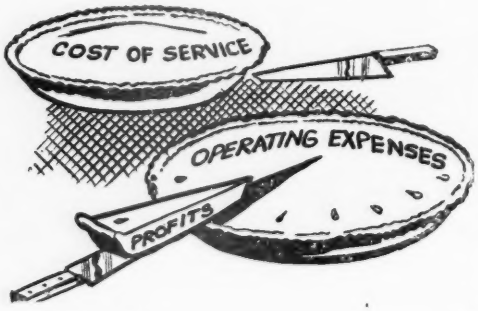
One immediate practical effect of the issuance of Release No. 85 has been to cause a number of companies to change the manner of reporting the deferred tax accruals in their 1959 annual reports to stockholders, even though many of them were distributed prior to the effective date of the release, April 30, 1960.

The reasoning behind such change prior to the effective date involves the language of Accounting Release No. 4, issued by the Securities and Exchange Commission in 1938, referred to in one of the quotations from Accounting Release No. 85 above. Under its provisions, so long as there is substantial anthoritative support for a particular accounting method, it may be followed in filings with the Securities and Exchange Commission, when accompanied by full disclosure, provided the commission has not previously expressed its position in rules, regulations, or "other official releases of the commission."

Such a view assumes that the commission has taken a position in an "official release" by issuing a Statement of Policy on February 29, 1960.

HOWEVER, even among companies making such a change in their current annual reports to stockholders, there is still a variety of treatment in the positioning of the tax accrual item on the balance sheet. One company employs a balance sheet in which all of the captions are of equal prominence, without subindentations and with only one total figure shown at the bottom. In this arrangement long-term debt appears as the first item on the liability side and deferred taxes appear immediately after earned surplus and just ahead of current liabilities. Other companies, having removed the deferrals from restricted surplus, carry them all the way down to the bottom of the balance sheet page, under a caption "Accumulated Deferred Taxes on Income," which would be the chronological position for the Federal Power Commission's prescribed Account 266 following immediately after "Contributions in Aid of Construction," which is Account 265. Some, using the same caption, place it just ahead of Contributions in Aid of Construction.

One company uses the caption "Accumulated Income Tax Reductions Attributable to Necessity Certificate Amortization" positioned below long-term debt and a combined caption "Capital Stock and Surplus" and just ahead of "Current Liabilities."



FPC Action

ALTHOUGH the Federal Power Commission had issued several orders as to both rate-making and accounting treatment of tax deferrals beginning as early as December, 1953, its major action with respect to accelerated depreciation is its now well-know Order No. 204 of May 29, 1958. This order departed somewhat from the techniques contemplated by the original notice of proposed rule making. The first major change was that, in lieu of the originally proposed "Reserve for Deferred Taxes on Income," the commission adopted Account 266, captioned "Accumulated Deferred Taxes on Income," explaining (Mimeo. ed., pp 4-6) that

> On consideration of the various aspects of this problem, we conclude that the congressional purposes . . . can reasonably be achieved by . . . providing a balance sheet treatment that *neither identifies the accumulated amounts as a reserve or as restricted surplus.*
>
> * * * *
>
> And while making provision for future tax liability, it *will not foreclose financial analysts,*[5] *investors, and others*

[5] In this connection the following summary of a poll conducted by the public utility department of Irving Trust Company is of interest (PUBLIC UTILITIES FORTNIGHTLY, Vol. 63, No. 11, p. 776, May 21, 1959): "With respect to the calculation of earnings per share to use in earnings-price ratios, a majority of analysts still preferred to exclude the tax savings (usually termed 'deferrals') from share earnings in cases where tax savings are normalized by the company or taken as extra depreciation. However, where flow through is used, a majority of the fifteen analysts consulted are now willing to include the savings in share earnings—a reversal of the 1957 expression."

from considering these amounts as part of equity capital if they think proper, with such consequential benefits to the rating of the company's securities and costs of financing as may result therefrom.

* * * *

Under the circumstances, however, we see no reasonable solution to the problem for those utilities which are required by a state commission to report deferred taxes in a reserve or surplus account but to classify the deferred taxes *in accordance with state requirements for state purposes,* and to use the treatment specified by this order for the purposes of this commission.

THE second major provision of Order No. 204 was, as we have seen above, that the deferred tax accounting provided for in the amendments to the Uniform System of Accounts is *not* mandatory.

Following the issuance of Order No. 204, it was generally assumed in the industry, on the basis of the excerpts quoted above, that the commission had pretty well solved the problem of conflict between state and federal regulatory orders in a practical way. However, beginning early in 1959 a number of companies received letters from the secretary of the FPC, stating that the staff had noted the current annual reports to stockholders, and, in some cases, registration statements, of these companies filed with the Securities and Exchange Commission, were at variance with the commission's Order No. 204, in that deferred taxes were shown in the surplus or equity portion of the balance sheet.

After extensive correspondence with these companies, show-cause orders have been issued against some ten of them during the last year.

ANSWERS have been filed in substantially all of these cases generally denying the allegations of the show-cause orders and the commission's jurisdiction over reports to stockholders and other material distributed to the public.

In one of these cases, involving the Virginia Electric & Power Company, a petition to intervene was filed on March 9, 1960, by the National Association of Railroad and Utilities Commissioners. The petition states that the Virginia State Corporation Commission and the North Carolina Utilities Commission, both of which have jurisdiction over the company, have prescribed the restricted surplus method of accounting and, as the commission's Order No. 204 indicates, "a co-operative accommodation to the extent possible, with the requirements of the several state commissions," the show-cause proceeding should be dismissed.

On October 22, 1959, the FPC issued Order No. 216, captioned "Order Clarifying Interpretation of and Amending Account 266." Such order became effective, by its terms, as of the date of its issuance but no opportunity was given for a hearing or submission of views with respect thereto. On December 15, 1959, Appalachian Power Company filed a petition with the commission seeking an order declaring that Order No. 216 was issued without complying with the Administrative Procedure Act and the Federal Power Act or, in the alternative, for rescission of Order No. 216. On May 23, 1960, the

commission dismissed the Appalachian petition on the grounds that Order No. 216 "merely interpreted that wording of the first paragraph of Order No. 204" and, hence, is not subject to the hearing and notice requirements of either of such acts.

Other FPC Cases

ANOTHER company, Central Hudson Gas & Electric Corporation, finds itself in a rather unique situation with respect to the Federal Power Commission. Prior to the issuance by the New York Public Service Commission of its order of March 30, 1959, directing all New York utilities to adopt "flow-through" accounting with respect to liberalized depreciation under § 167 of the Internal Revenue Code, Central Hudson, pursuant to an accounting plan filed with the FPC in lieu of a state commission order, had been normalizing the deferred taxes arising from liberalized depreciation and making corresponding credits to a restricted surplus account.

It is understood that the staff of the Federal Power Commission takes the view that Central Hudson should now transfer these prior accruals from surplus to Account 266, "Accumulated Deferred Taxes on Income," with respect to both the electric and gas properties of the company, although Central Hudson is not subject to the Natural Gas Act, having received a specific exemption order under the so-called "Hinshaw Amendment" to that act.

ON the positive side, the commission recognized last year in the El Paso Natural Gas Company rate case (Opinion No. 326), 29 PUR3d 469, 22 FPC 260 (1959) that normalization of taxes arising from liberalized depreciation is appropriate in rate-making proceedings and that reserves for such taxes need not be deducted from the rate base, following its prior decision in the 1954 Panhandle Eastern Pipe Line Company rate case (Opinion No. 269), 3 PUR3d 396, with respect to accelerated amortization. A similar result is reached in the

recent United Fuel Gas Company rate case (Opinion No. 334, January 22, 1960), 32 PUR3d 209.

It is of interest to note, however, that the commission's warning in the El Paso case, that the favorable effect of deferred taxes arising from liberalized depreciation and accelerated amortization on a company's cost of money might lead them to "consider whether to reflect this tendency in determining a fair rate of return" (Opinion No. 326, Mimeo., page 9),[6] was again repeated in denying petitions for rehearing in the United Fuel case (Opinion No. 334A, March 18, 1960, Mimeo. ed., pages 2, 3).

The precise question did not arise in the El Paso and United Fuel cases because, as the opinions point out, all the parties had agreed to the rate of return.

More recently, the commission has followed the same principles with respect to deferred taxes in another field of its regulatory jurisdiction—the determination of surplus earnings from licensed hydroelectric projects under § 10(d) of the Federal Power Act. In the Florida Power Corporation case, decided October 26, 1959 (Project Nos. 177 and 682), the commission approved a staff determination normalizing deferred taxes arising under both §§ 167 and 168 of the Internal Revenue Code and made no deduction of the deferrals in determining the project rate bases. This is in contrast to the commission's action in the same order deducting all balances in Account 100.5 for rate base purposes and eliminating, as revenue deductions, all 100.5 annual charges.[7]

Action by Other Federal Agencies

In concluding the discussion of the federal regulatory aspects, it is of interest to note the action taken by two other independent agencies.

In February, 1959, the Interstate Commerce Commission issued a statement of policy, requiring that all subject carriers should use only the actual taxes paid in connection with liberalized depreciation. That notice also stated that the actual taxes method should be "disclosed by explanatory notes in reports filed with the commission" and urged that all carriers "disclose this information in their reports to stockholders and in financial statements released to the press" (24 *Fed Reg* 1401).

In March, 1958, the Civil Aeronautics Board (by Regulation No. ER-230), suspended a prior prohibition against deferred tax accounting and placed it on a voluntary basis, pending a final decision of the board as to the rate treatment that should be given to deferred taxes.

[6] See also the emphasis placed by the commission on the tax advantages arising from percentage depletion and intangible well-drilling deductions as an element of the rate of return in its order denying rehearing in the same proceeding (Opinion No. 326A, October 8, 1959), and again in the United Fuel case (Opinions No. 334 and No. 334A).

[7] However, in a substantially identical order involving Kentucky Utilities Company, issued January 4, 1960 (Project No. 539), the FPC said in a footnote (p. 5):

> The staff analysis in this proceeding was completed prior to the issuance of commission Opinion No. 326 on August 10, 1959, In the Matter of El Paso Natural Gas Company, 22 FPC 260, and therefore does not reflect the rate-making treatment of annual deferred taxes in connection with working capital allowance as there set forth. A recalculation of this item in determining licensee's "surplus earnings," as set forth above, would not result in any substantial modification in the total credit to licensee's amortization reserve as recommended by staff; therefore no revision in licensee's annual working capital allowance is deemed necessary.

No further action has been taken by the ICC. On April 29, 1960, the CAB announced its "tentative vote" in the General Passenger Fare Investigation and stated it would "recognize for rate-making purposes estimates of federal income tax expense on the basis of normalized taxes," but that the corresponding reserves for deferred taxes would be excluded from the "investment base." The press release also pointed out that all members were not in agreement on all the issues and the board's formal decision would be issued at a later date.

State Commission Action—Accounting

(a) *Accelerated Amortization*

THE most recent data available[8] indicate that thirty-seven state commissions, through formal orders or otherwise, have prescribed the accounting treatment for accelerated amortization.

Sixteen states (Alabama, Colorado, Florida, Maryland, Montana, New Hampshire, New Jersey, New York, Oklahoma, Pennsylvania, South Carolina, Vermont, Virginia, Washington, West Virginia, and Wyoming) have provided for a credit to restricted surplus.

Ten states (Arkansas, Connecticut, Georgia, Illinois, Kansas, Louisiana, Massachusetts, Missouri, Nevada, and Utah) have prescribed a reserve method.

Nine commissions have each issued orders authorizing a credit to restricted surplus in certain cases and to a reserve in others (California, Idaho, Kentucky, Maine, Michigan, New Mexico, North Carolina, Ohio, and Oregon).

The Wisconsin Public Service Commission has approved an accounting method differing substantially from the techniques adopted by other state commissions. Wisconsin provides for a charge to depreciation expense and a credit to depreciation reserve (in addition to depreciation computed on a straight-line basis) equal to the deferral of federal income taxes resulting from the use of accelerated amortization. Indiana now permits the use of either restricted surplus or reserve methods.

(b) *Liberalized Depreciation*

THIRTY-SIX state commissions have adopted formal orders or directions prescribing the accounting treatment which subject utilities must follow in connection with liberalized depreciation.

Six states (Alabama, Colorado, Flori-

[8] Much use has been made of the annual reports of the Special Committee on Tax Amortization of the Federal Power Bar Association. The original compilations by the writer, as the early chairman of the committee, have been brought up to date and expanded by the competence and energy of the subsequent chairmen. Great assistance has also been rendered in assembling the original compilations and bringing them up to date by, among others, the staff of the Edison Electric Institute, Ebasco Services Incorporated, the Federal Power Commission, the National Association of Railroad and Utilities Commissioners, and the PUBLIC UTILITIES FORTNIGHTLY.

In preparing the summaries in this section the most recent known decision in each state has been used.

da, Maryland, New Hampshire, and Virginia) have either authorized specific utilities, or have directed all subject utilities, to use a restricted or appropriated surplus method in recording the tax deferral.

Seventeen states (Arkansas, Georgia, Hawaii, Idaho, Illinois, Kansas, Louisiana, Maine, Massachusetts, Minnesota, Missouri, Nebraska, New Mexico, Oregon, Tennessee, Vermont, and Wyoming) have prescribed a tax reserve method.

Six other states (Kentucky, Michigan, New Jersey, Ohio, Oklahoma, and South Carolina) have permitted, upon application by specific companies, the use of either restricted surplus or the reserve method.

Five states (Arizona, California, New York, Pennsylvania, and West Virginia) have provided for an actual taxes paid procedure.

Wisconsin provides for a substantially unique accounting procedure, as described under "Accelerated Amortization." And Indiana again permits the use of either restricted surplus or reserve methods as in the case of Accelerated Amortization.

Rate Making

(a) *Accelerated Amortization*

WITH respect to rate making, in so far as accelerated amortization is concerned, the pattern seems to be reasonably well-established in favor of normalization. Eighteen states, which are all the states known to have passed on the subject, have, with the sole exception of North Dakota, recognized deferred taxes:

Arkansas	Maine	New York
California	Michigan[9]	Oklahoma
Florida[9]	Missouri	Pennsylvania
Illinois	Nevada[9]	Virginia
Indiana	New Hampshire	Washington
Kansas[9]		
Kentucky	New Jersey	

The Federal Power Commission reached the same conclusion in the City of Detroit case and has been upheld by the United States court of appeals, City of Detroit *v.* Federal Power Commission (CA DC) 11 PUR3d 113, 230 F2d 810 (1955). The North Dakota commission was at pains to state that its decision refusing to allow normalization of deferred taxes was not to be regarded as a precedent for other cases, saying:

> . . . it is the commission's opinion that where the accrual is large enough to create a substantial discrimination such deferred charge against income might well be allowed. (Montana-Dakota Utilities Co. 22 PUR3d 505 (1958) at 517.)

(b) *Liberalized Depreciation*

As we have previously seen, the Federal Power Commission has recently permitted normalization of deferred taxes arising from liberalized depreciation in the El Paso and United Fuel Gas rate cases.

The states of Florida and Nevada have recently joined the list of those permitting normalization in the case of liberalized depreciation. In addition, according to testimony before the Cali-

[9] No express commission statement. Determined by F. M. Beatty of the accounting firm of Arthur Andersen & Co. from examination of records.

fornia Public Utilities Commission (Case No. 6148) by F. M. Beatty of the accounting firm of Arthur Andersen & Co. the commissions in Georgia, Maryland, and Massachusetts have allowed deferred taxes in rate determinations without express mention in the commission opinions.

On the other side of the picture, California, Connecticut, and New York should be added to the list of states which prescribe the flow-through method. It thus appears that 16 states now permit normalization of deferred taxes arising from liberalized depreciation for ratemaking purposes, and that 10 do not.

Deferred Taxes Allowed

Florida	Massachusetts[10]
Georgia[10]	Michigan
Hawaii	Montana
Illinois	Nevada
Indiana	New Mexico
Kansas	Ohio
Kentucky	Oklahoma
Maryland[10]	Wyoming

Deferred Taxes Not Allowed

California	New York
Connecticut	North Dakota
Missouri	Pennsylvania
New Hampshire	West Virginia
New Jersey	

Deduction of Deferrals from the Rate Base

Another significant aspect of the pattern of state commission action in the past few years is found in the growing number of state commissions that either deduct accruals for deferred taxes from the rate base or make an adjustment therefor in the rate of return, particularly where liberalized depreciation is involved. Based on a study we have made, eight states have required that accumulated deferrals, arising from liberalized depreciation, be deducted from the rate base.

Florida

Re Florida Power & Light Co. (Order No. 2515), 19 PUR3d 417 (1957)—a deduction of the test year provision from gross working capital allowance.

Illinois

Re Commonwealth Edison Co. (Docket Nos. 44391, 44551-44555), 24 PUR3d 209 (1958).

Kentucky

Re Western Kentucky Gas Co. (Case No. 3267), 21 PUR3d 394 (1957).

Re Kentucky Utilities Co. (Case No. 3324), 22 PUR3d 113 (1958).

Georgia

Re Georgia Power Co. (File No. 19314), 10 PUR3d 259 (1955)—ap-

[10] No express commission statement.

proved this treatment on a temporary basis subject to the commission's right to revise its order if it found that this deferred accounting treatment was inappropriate.

Oregon

Re West Coast Teleph. Co. (Order No. 36397), 27 PUR3d 489 (1958).

Hawaii

Re Honolulu Rapid Transit Co., Ltd. (Decision and Order No. 970), 28 PUR3d 1 (1959).

Wisconsin

The state commission provides for a charge to depreciation expense and a credit to depreciation reserve (in addition to depreciation computed on a straight-line basis) equal to the deferral of federal income taxes arising from the use of liberalized depreciation which, of course, results in a deduction of the amount from the rate base. The following cases are illustrative of the commission's approach to the matter:

Re Wisconsin Fuel & Light Co. (2-U-4138), 12 PUR3d 254 (1956).

Re Milwaukee Gas Light Co. (2-U-4266), 15 PUR3d 170 (1956).

Re La Crosse Teleph. Corp. (2-U-4202), 20 PUR3d 94 (1957).

Maryland

F. M. Beatty has reported that deferred taxes in rate determinations were allowed in Maryland but that corresponding deductions in the rate base were also made. This opinion was based on his analysis of the various exhibits and orders involved.

INVESTIGATION has revealed only four states, however, which have imposed such a requirement in the case of accelerated amortization:

Florida

Re Florida Power & Light Co. (Order No. 2515), 19 PUR3d 417 (1957)—a deduction of the test year provision from gross working capital allowance.

Kentucky

Re Kentucky Utilities Co. (Case No. 3324), 22 PUR3d 113 (1958).

New Hampshire

Re Public Service Co. of New Hampshire (Order No. 7248) 27 PUR3d 113, 122 (1959), affirmed in Public Service Co. of New Hampshire *v.* State of New Hampshire, 153 A2d 801, 30 PUR3d 61 (1959).

Pennsylvania

Pennsylvania Power & Light Co. 14 PUR3d 438 (1956).

It is interesting to note that in the case of the New Hampshire Public Service Commission the accumulated deferred taxes so deducted were in restricted surplus and not in a reserve account, and that the commission's action was affirmed by the state supreme court.

Deferrals Considered in Adjusting Rate of Return

FIVE states have decided that deferred taxes will be considered in adjusting the rate of return by treating the accrued deferrals as cost-free capital in determining the cost of money to the utility:

Kansas

Re Empire District Electric Co. Docket No. 55,302-U), 23 PUR3d 45 (1958)—liberalized depreciation.

Michigan

Re Michigan Gas & Electric Co. (D-2932-58.1), 24 PUR3d 278 (1958) —liberalized depreciation.

Re Michigan Consolidated Gas Co. (D-3430-58.1), 22 PUR3d 369 (1958) —liberalized depreciation.

Ohio

Re Ohio Fuel Gas Co. (No. 26,371), 25 PUR3d 207 (1958)—liberalized depreciation.

Oregon

Re Pacific Power & Light Co. (UF-2175, Order No. 37086) — PUR3d —(1960)—accelerated amortization.

Washington

Re Pacific Power & Light Co. (U-9097) — PUR3d — (1960) — accelerated amortization.

In a sixth state, Illinois, the state commission has not followed a consistent policy in dealing with deferred taxes arising from liberalized depreciation. In June, 1958, in the case of Commonweath Edison Company, 24 PUR3d 209, cited above, the commission deducted a Reserve for Deferred Federal Income Taxes in fixing rates. Then, in the Peoples Gas Light & Coke Company case, 27 PUR3d 209, handed down on February 11, 1959, the commission leaned toward an adjustment of the rate of return for accruals of deferred federal income taxes, but refused to deduct the reserve from the company's rate base. A similar decision was reached in the Union Electric Company case, 29 PUR3d 177 (July 22, 1959).

On July 30th of last year in the General Telephone Company of Illinois case, 29 PUR3d 369, the commission ruled that the reserve for income taxes resulting from the use of liberalized depreciation should be included in a fair value rate base, provided the "utility puts the money representing the deferred income tax into property which is used and useful in providing the (utility) service . . ." (page 378). While the latter three cases would indicate a firming up of commission position on liberalized depreciation, the Illinois supreme court, on January 22, 1960, in City of Alton *v.* Illinois Commerce Commission (Docket No. 35242), 33 PUR3d 76, held that the commission may not shift the benefit of liberalized depreciation from the ratepayers to the shareholders and must deduct the tax reserve from the rate base.

Views of the New York Commission

While indicating that it too will consider the effect of both accelerated amortization and liberalized depreciation in rate making, the New York Public Service Commission has adopted a somewhat different approach. It waited until much of the dust had settled and first made its views known on March 30, 1959, in the form of a statement of policy, Re Niagara Mohawk Power Corp., 28 PUR3d 171. With respect to accelerated amortization the commission said (page 195):

> In rate matters, the commission will as a matter of policy consider the effect of any § 168 tax benefits upon the utility in determining the proper rate of return for that utility.

It then continued to state its views as to the future treatment of liberalized depreciation (*ibid.*):

In rate matters the commission will as a matter of policy allow as a part of the cost of service the income taxes properly assignable to the operating income determined for rate case purposes, giving effect to liberalized depreciation tax deductions available to the utility under the tax code. The impact of taxes, paid by the utility in the first instance, is in reality borne by the ratepayer. It is the duty of the utility to ease that burden to the extent that lawful compliance with the tax laws permit. This commission should encourage this tax saving and in future rate proceedings this element, intangible as it may be, will be given consideration.

IN the subsequent Central Hudson Gas & Electric Corporation case, 28 PUR3d 317 (May 26, 1959), the commission expanded on its views, saying (pages 320, 321):

> It follows that for equitable treatment there should be some sharing of the § 167 tax benefits between the customers of the company and the company itself, to the customers because it is the duty of the utility to keep its operating costs as low as is consistent with the maintenance of adequate service and to the utility or its security holders to furnish an incentive for the use of the most advantageous tax depreciation method. *The proportions of sharing should not be predominantly to the company* but rather in major part to the customer, although no precise formula can be set down that would apply to each and every utility. . . .

Mandatory Use of Liberalized Depreciation

ANOTHER important aspect of the regulatory process in this field is the question of whether utility companies should be compelled to take advantage of the liberalized depreciation options available under § 167 of the Internal Revenue Code.

In a number of cases utilities have declined so to do. This course may be adopted as a matter of policy, as seems to be the case with many telephone companies, or it may be adopted in order to avoid undesired consequences arising from the refusal of a regulatory commission to permit normalization of deferred taxes in rate-making proceedings. It has been argued in some cases that the regulatory commission should compel the utility to elect liberalized depreciation or, in the absence of power to make such an order, that the regulatory commission should determine rates as though liberalized depreciation had in fact been elected, following the precedents set, for example, by the Louisiana and Mississippi commissions in assuming hypothetical security structures for telephone companies.

THE Pennsylvania commission has refused to follow this approach and was affirmed by the Pennsylvania superior court in the City of Pittsburgh case, 144 A2d 648, 25 PUR3d 273 (1958). Companies subject to its jurisdiction, which actually use straight-line depreciation for tax purposes, may base their rates on the actual tax expense.

In the only decision to the contrary noted to date, the Maine Public Utilities Commission fixed rates for the Bangor

Hydro-Electric Company as though it had the benefit of liberalized depreciation for tax purposes, even though the company had elected to revert to the straight-line method, Re Bangor Hydro-Electric Co. 26 PUR3d 489 (1958). No appeal was taken from this order.

It appears that the Maine view has been rejected in California, all utilities,— PUR3d — (Case No. 6148, April 12, 1960), Connecticut, Re Housatonic Pub. Service Co. 22 PUR3d 1 (1958), and Missouri, Re Raytown Water Co. 22 PUR3d 556 (1958). In the recent Mountain States case, Re Mountain States Teleph. & Teleg. Co., 31 PUR3d 417 (1960), the Montana commission stated, in refusing to require use of accelerated depreciation methods in fixing rates:

> . . . Counsel for the protestants briefed this point thoroughly, but the question still remains whether a tax deferral or a tax saving is the result of the adoption of accelerated depreciation. We note that opinions differ on this subject, and until more conclusive proof is produced that an actual tax saving is realized, we are constrained to consider the utilization of such a depreciation method as merely a tax deferral (pp. 435, 436).

Conclusion

WHILE it is still far too soon to draw any long-range conclusions, or predict definite trends, from the number of significant regulatory decisions of the past months, a few educated guesses are possible. On the assumption that the Securities and Exchange Commission's Accounting Release No. 85, and the related show-cause orders of the Federal Power Commission, are unchallenged in the courts, it would seem that many companies practicing deferred tax accounting, and making corresponding credits to a surplus account, will, upon securing state commission approval, switch to the "flow-through" method with respect to liberalized depreciation. They may not in so doing be able to retain the prior accruals as part of equity capital in the light of the Federal Power Commission's denial (by letter, dated February 11, 1959) of Duquesne Light Company's request to transfer prior accruals from Account 266 to unrestricted surplus, following the disallowance by the Pennsylvania Public Utility Commission of normalization for rate-making purposes in the case of liberalized depreciation.

However, they will enjoy, by adopting flow-through accounting, the immediate improvement in earnings and its effect on unrestricted surplus,[11] and can have some hope, at least, that the views of the New York Public Service Commission, quoted above, will have some nation-wide

[11] See footnote 5, above.

effect in securing a reasonable sharing of the tax advantages stemming from liberalized depreciation methods between a particular company and its present ratepayers.

A SIMILAR trend with respect to accelerated amortization is not likely because Accounting Research Bulletin No. 42 (now Chapter 9C of Bulletin No. 43) of the American Institute of Certified Public Accountants requires the use of deferred tax accounting, or normalization. Companies having sizable amounts involved in necessity certificates, several of whom are still in the five-year amortization, or "pay-in," period, are faced with a serious problem.

Many of them accepted their certificates, and issued millions of dollars of securities, in reliance on existing state commission orders and on the express language of the Federal Power Commission's Order No. 204 that the accounting treatment thereby prescribed "will not foreclose financial analysts, investors, and others from considering [the deferred tax accruals] as part of equity capital." It is hoped that enlightened regulatory concepts will also be applied to this problem.

EEI 1960 CONVENTION TIMETABLE, ATLANTIC CITY, NEW JERSEY

Sunday, June 5th

1:00 p.m.	Registration, lobby, Traymore Hotel (till 6 p.m.).

Monday, June 6th

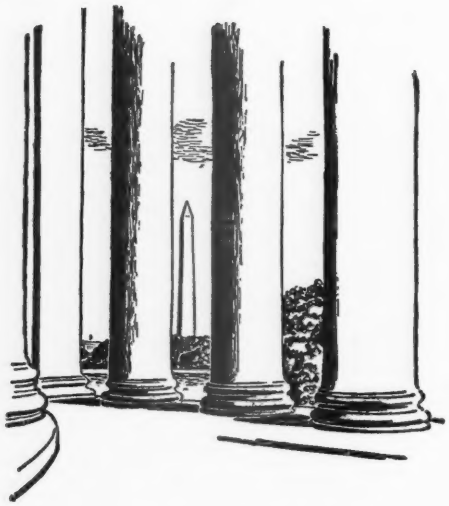
8:30 a.m.	Registration, lobby, Traymore Hotel (till 12 noon).
12:00 noon	Registration, lobby, Warren Theater (till 5 p.m.).
2:30 p.m.	First General Session, Warren Theater.
5:00 p.m.	President's Reception, Carolina Room, Chalfonte Hotel (till 7 p.m.).

Tuesday, June 7th

8:30 a.m.	Registration, lobby, Warren Theater (till 5 p.m.).
9:30 a.m.	Second General Session, Warren Theater.
12:00 noon	Ladies' luncheon, Claridge Hotel, followed by fashion show and special entertainment at Roxy Theater.
2:30 p.m.	Third General Session, Warren Theater.

Wednesday, June 8th

8:30 a.m.	Registration, lobby, Warren Theater (till 3 p.m.).
9:30 a.m.	Fourth General Session, Warren Theater.
2:30 p.m.	Fifth General Session, Warren Theater.
8:30 p.m.	Presentation of the Edison Award, followed by special entertainment through courtesy of Westinghouse Electric Corporation, Warren Theater.



Washington and the Utilities

Corcoran at the Bat

FOR the first time since the Harris Subcommittee on Legislative Oversight started its probe of the regulatory commissions, it received a lecture at the hands of an interrogated witness. The same inquisitors who had brought down such government figures as Sherman Adams, FCC Chairman Doerfer, FCC Commissioner Mack, and gave a good many others a hard time, fidgeted like schoolboys when the fast-talking, quick-thinking lawyer-lobbyist, Thomas G. Corcoran, took the stand to explain his so-called "ex parte" contacts with the FPC membership.

Not only did Corcoran say that his informal contacts on "procedural matters" were entirely proper, but he went further and said there was nothing in the law or FPC regulations forbidding him to walk into commissioners' offices and discuss the merits of cases if he so chose. Nonplused congressional committee members began to wonder whether maybe Corcoran was right and whether they should patch up the law on that subject. When one Congressman put this idea in the form of a question, the suave former New Deal brain truster replied, imperturbably, "It's about time this committee got around to its legislative program." His lips moved almost as if to add, "if it has one."

The subcommittee questioned Corcoran for the second day about off-the-record conversations he had last October with three FPC members about a pending decision on the petition of Midwestern Gas Transmission Company to build a pipeline from Canada to the Midwest. Corcoran again insisted that in these chats he did not bring up the arguments why Midwestern should be allowed a 7 per cent rate of return on its investment, although he contended he would have had a legal right to do so if he had desired. Representative John E. Moss (Democrat, California) asked Corcoran if it were not true that FPC Member Arthur Kline previously testified he regarded Corcoran's talk with him as improper. Corcoran replied that Kline had qualified that statement by saying it depended upon what was going on in Corcoran's mind during the conversation.

"The devil himself knoweth not the mind of man," Corcoran observed.

Moss asked if Corcoran regarded his conduct as in accordance with prevailing practice before the FPC. Corcoran said it was accepted practice before the commission at this time. The questioning of the former Roosevelt administration figure was punctuated by barbs between Democratic and Republican committee members, as well as some fired by Corcoran. Representative Steven B. Derounian (Republican, New York) at one point accused Corcoran of filibustering with the frequently lengthy answers he fired in rapid fashion to the questions. "Just answer the question, Mr. Corcoran. I don't want you to be a long-playing record," Derounian said. "You've been doing that for two days now."

A moment later Derounian charged Corcoran was being "coached." The Congressman warned he would insist on James H. Rowe, Jr., Corcoran's law partner, being ejected if he persisted in talking to Corcoran and passing him notes. When Derounian questioned Corcoran about the nature of his law business and how he bills his clients, Corcoran began to respond by saying, "I'm not like your friend Tom Dewey," the former New York governor whose firm has some business before federal regulatory agencies too. Derounian snapped that Dewey was not his friend.

REPRESENTATIVE William Springer (Republican, Illinois) accused Corcoran of trying to influence the commission in a gas pipeline case. Springer said, "You were trying to influence against the public interest."

Corcoran insisted there was nothing improper or illegal about his calls to the commissioners in behalf of the Midwestern Gas Transmission Company. He said the FPC staff, which was "on the adverse side" of the case freely contacted the commissioners about it. Springer contended that the staff was representing the public interest in the case. He did not dispute Corcoran's statement that the lawyer's visits were perfectly legal. But he said Corcoran's testimony showed that "there are serious changes in the law which must be made."

Representative Peter F. Mack, Jr. (Democrat, Illinois), said testimony at the subcommittee hearings showed that many gas company representatives had visited the commissioners. "It seems to me the purpose of their visits was to influence the commission," he said.

Representative John B. Bennett (Republican, Michigan) noted Corcoran's testimony about the reason he was sent to see the commissioners by Gardiner Symonds, board chairman of Midwestern's parent firm, the Tennessee Gas Transmission Company. Corcoran said Symonds wanted him to tell the commissioners, "Listen, I mean business," and he would not accept an FPC permit to build a gas pipeline without a 7 per cent return on investment. Corcoran added that "I carefully changed the language" to make sure that the commissioners he talked to did not get any impression this was an "ultimatum."

CORCORAN repeatedly parried questions directed at him by subcommittee members and appeared unruffled by it all. He described questions asked by Bennett as "loaded" and "repetitive" and at one point a "beating your wife" inquiry. This led Bennett to ask Harris to direct Corcoran to be responsive and cease making "a 15-minute speech" in answer to each question. Harris agreed with Bennett, although he said "There has been a little of it (delay) on both sides." Corcoran said he could not recall for sure whether he told the FPC members last October that

Tennessee might divest itself of majority control of Midwestern because of possible antitrust action.

Bennett had contended this statement could have been made in an effort to convince the FPC members Midwestern needed a higher rate of return if it was going to have to stand on its own feet financially. He testified again that he did not argue the merits of the pending case when chatting with the commissioners. "There's a code about this thing," he explained. "You just don't do it."

Corcoran said that his contacts with the commissioners were just as proper as letters from members of Congress to the FPC supporting gas company applications. Congressional letters, he hastened to add, were not only proper but "very desirable and helpful." Corcoran made the comparison after Bennett disclosed that he had written the FPC about a dozen letters urging that natural gas be brought into Michigan's upper peninsula.

CORCORAN acknowledged, under Bennett's questioning, that the gas company he represented had made a copy of one letter the Congressman wrote the FPC last September. He said he had shown Bennett's letter to Chairman Harris during a recent visit with Harris. Corcoran said copies of letters from other Congressmen, mayors, governors, and chambers of commerce had been made to show the support for Midwestern Gas Transmission Company's application to build a pipeline from Canada to North Central states. The letters, he said, were in the FPC's public files.

Bennett asked Corcoran whether he put his visits to FPC commissioners "in the same category" as letters from Congressmen. "Aren't they the same thing?" Corcoran replied.

Bills in Congress

THE Senate has passed and sent to the House a bill (S 910) providing for federal payments in lieu of state and local taxes on federal commercial and industrial real property acquired after June 30, 1950. The bill, introduced by Senator Humphrey (Democrat, Minnesota), contained provision for such payments to be made on federal property used in the generation of electric energy. This language, however, was stricken in the version which the Senate approved. A number of similar bills have been introduced in the House, but no hearings have been scheduled. The administration opposes this legislation on the grounds that it would cost the Treasury over half a billion dollars annually.

The $4 billion Agriculture Appropriations Bill passed by the House on May 12th contained $200 million in funds for REA. The REA money is broken down as follows: There will be $110 million for new electrification loans during the coming fiscal year of 1961. There will be $80 million for new rural telephone loans during the same period. There will be $9,632,000 for REA's own administration expenses. These sums are all just about the same as requested in President Eisenhower's budget last January.

In addition, however, the House Appropriations Committee added a $50 million contingency fund to the rural telephone program and another $50 million contingency fund to the rural electrification program. These contingency funds were not contained in the President's budget last January. The Senate is not expected to change the REA part of the bill very much, but there will be arguments and probable changes on certain general agriculture provisions.

Financial News and Comment

By OWEN ELY

The Political Agitation for 5 Per Cent Annual Growth in GNP

THE idea that our national rate of growth should be stepped up so that we can maintain our competitive relation with the Soviet Union has been frequently discussed during the past year, and may be one of the issues of the forthcoming campaign. The Committee for Economic Development has been active in exploring this field and recently stated in one of its bulletins that "understanding the economic forces that promote our economic growth is a MUST for our personal and national welfare; the forces which will defeat Mr. Khrushchev and his cohorts."

Unfortunately, some members of Congress feel that greater growth can be achieved only by increased federal spending, whether this brings inflation or not.

DEPARTMENT INDEX

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Earlier this year the Joint Economic Committee issued its report on growth, employment, and prices; in this the Democratic majority claimed that the administration has curtailed growth by trying to check inflation with overly strict credit restrictions. About 125 younger Democrats in Congress have formed an organization called the "Democratic Study Group" to analyze key issues, such as spending for defense, school aid, housing, special aid for depressed areas, etc.

According to *Business Week*, the Democrats point to a growth of 4.6 per cent in the economy during 1947-53, while in later years (the Republican régime) growth has been only half as fast. But Republicans retort that the figures were hand picked—that the earlier period reflected reconversion from World War II, forced production to meet Korean War needs, and heavy inflation as an extra stimulus, while the base year for the Eisenhower period was 1953—a peak year of Korean War production.

THE CED has made some interesting studies in its bulletin "Prices, Costs, and Output 1947-57," a 77-page study prepared by Charles L. Schultze, economist at Indiana University. On page 29, Table 2, the rate of gain for 1947-57 in Gross National Product (GNP) is given

as 47 per cent for this decade or 3.9 per cent per annum compounded. The growth of individual U. S. industries during this period was calculated by the CED to have been as follows, in the order of increase:

Public Utilities	128%
Communications	92
Finance and Insurance	90
Transportation (except rail)	66
Construction (contract)	59
Retail Trade	43
Manufacturing	42
Services	36
Wholesale Trade	31
Mining	25
Farming	22
Rail Transportation	11% decrease

Thus the utilities have "led the procession" during the postwar period, and they will doubtless continue to do so according to industry plans as projected by the AGA and EEI. The most conservative EEI estimate in electric output during the next forty years (see chart, page 854) indicates anticipated growth of over 5 per cent per annum.

MUCH of the importance of the growth idea is due to fallacious comparisons with Russia's rate of growth. Arthur Schlesinger, Jr., said to be a maker of current Democratic doctrine, estimates our growth in 1953-58 at only 1.6 per cent compared with Russia's 9½ per cent; and Leon Keyserling says that since the Korean War we have been growing at only a little better than 2 per cent a year, while the U.S.S.R. has achieved more than 10 per cent. But Colin Clark, the distinguished British authority on productivity now associated with the Econometric Institute of New York, has "exploded" the notion that the Soviet economy is growing faster than ours, according to *Fortune*. The high Russian figures are derived mainly from the period when that country was recovering from the devastation of war. Germany, Japan, and Italy have shown similarly high annual growth rates under similar circumstances.

Growth in national production is due to two factors, population growth and man-hour productivity. Clark says that on a long-range basis (1913-56) Russia's productivity rate was only 1.2 per cent a year compared with the U. S. rate of 2.3 per cent; and allowing for population gains, Russian increase in GNP was 2.5 per cent *versus* 3.5 per cent for the U. S. But our population is now gaining at 1.8 per cent a year; this increase combined with the long-term average of 2.3 per cent for productivity should produce better than 4 per cent growth in GNP.

DEMOCRATIC spokesmen, however, want a 5 per cent rate of growth. The AFL-CIO is quoted as follows: "Only a balanced economy with a sustained growth rate of 5 per cent a year can provide a healthy relationship between a fast-growing labor force and rapid increases in productivity and productive capacity." Apparently the Democratic policy makers would like to set up target goals for different industries, for national defense expenditures, and for heavier subsidies to depressed population groups or areas. The idea is reminiscent of the "five-year plans" of Russia and China.

To accomplish these ends the growth proponents think the government should institute consumer controls (less drastic than Russia's, it is to be hoped), together with wage and price controls, easier credit, and other methods usually reserved for wartime emergencies.

But as *Business Week* points out, growth to be of sound character should reflect technological progress rather than mere government spending. Robert Silow of MIT has estimated that only 13 per

cent of our increase in output per man-hour in the forty years ending 1949 was due to added capital, while 87 per cent was due to technological progress. In a study of current growth, *Business Week* names 13 items (headed by transistors) which are now growing at the rate of 40 per cent or more a year, ten that are gaining 30 to 40 per cent, and ten that are gaining 20 to 30 per cent.

ACCORDING to another study, the U. S. growth rate averaged 3 per cent during 1909-57—1 per cent due to population gains, and 2 per cent due to increased productivity. To achieve the latter gain currently, we are said to be spending about $75 billion a year or 15 per cent of GNP for investment in productive assets, and in research and education. To raise the growth rate from 3 per cent to 5 per cent as some liberal politicians and economists urge, the annual gain in efficiency must be doubled from 2 per cent to 4 per cent (unless population gains will continue at more than 1 per cent). To accomplish this we should logically have to spend $150 billion a year or 30 per cent of GNP for new facilities, education, and research. But whether so sudden an increase in such expenditures would be wise is another question. A more gradual approach would seem necessary to avoid inflationary problems and waste of funds.

Both the electric and the gas utility companies, either individually or in groups, are stepping up their expenditures for research and development in basic production methods and in improvement of appliances. Thus they are meeting the political challenge of the day, and reducing the danger of successful agitation for public ownership of utilities.

Long-term Forecast for Electric Power Output

AS the result of an extensive survey of the entire nation over a period of months by a task force of utility experts (in addition to the routine studies made by the Electric Power Survey Committee) the EEI has prepared forecasts extending to 1980 and 2000, as indicated in the charts on page 854. At the beginning of 1960 investor-owned electric utilities had over 127 million kilowatts of generating capability.

By 1970 they expect to more than double their capacity, bringing the total to 263 million kilowatts; and to meet the power demands of 1980, they expect to reach a capability of over 492 million kilowatts. This is nearly four times to-

CURRENT YIELD YARDSTICKS
(Standard & Poor's Indexes)

	May 18, 1960	*1959-60 Range High*	*Low*	*1958 Range High*	*Low*
Utility Bonds—A1+	4.54%	4.72%	4.23%	4.27%	3.58%
—A1	4.57	4.76	4.24	4.34	3.61
—A	4.73	4.94	4.44	4.51	3.85
—B1+	4.91	5.19	4.71	4.96	4.20
Preferred Stocks*	4.76	4.90	4.45	4.67	4.26
Utility Common Stocks	3.95	4.13	3.71	4.98	3.81
Spread—Common Stocks *v.* A1+ Bonds	—0.59	—0.59	—0.52	+0.71	+0.23

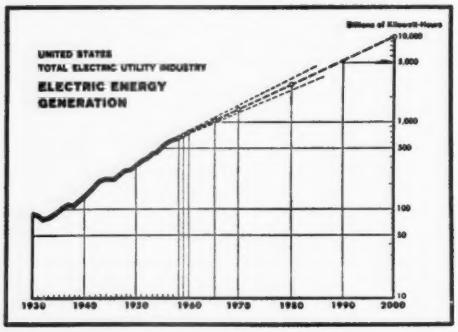
*Twelve industrial and two utility issues (high-grade).

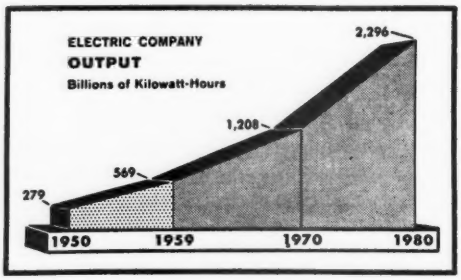
day's total and almost twice that predicted for 1970.

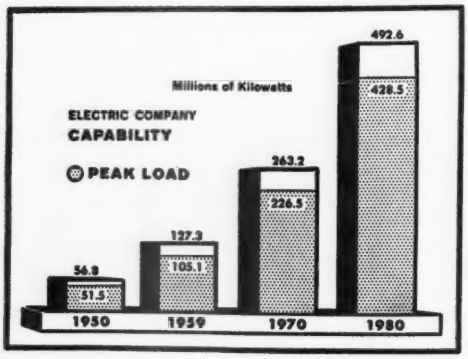
SUCH growth will of course involve raising of tremendous new funds through sale of securities. The electric utilities now have about $43 billion invested in electric plant and equipment, and they will need about $52 billion for new construction during the 1960's and over $91 billion for the decade ending in 1980—a total of $143 billion or over three times the present investment.

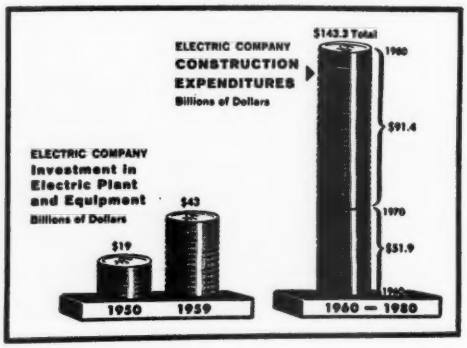
Last year total electric output was 4,525 kilowatt-hours per capita; by 1970 it is estimated that this will increase to 7,555 and by 1980 to 11,800 kilowatt-hours. Thus the growth of population—estimated at 68 million by 1980—combined with the increased use per capita, accounts for the projected increase in output. In 1970 total output is forecast at about 1.2 trillion kilowatt-hours, more than double that of 1959, and in 1980 at 2.3 trillion kilowatt-hours or nearly double the 1970 figure. This growth will not however be uniformly distributed throughout the country. Based on charts contained in the EEI brochure "Meeting Tomorrow's Power Needs," the figures for different regions are as follows, ranked according to anticipated rate of growth:

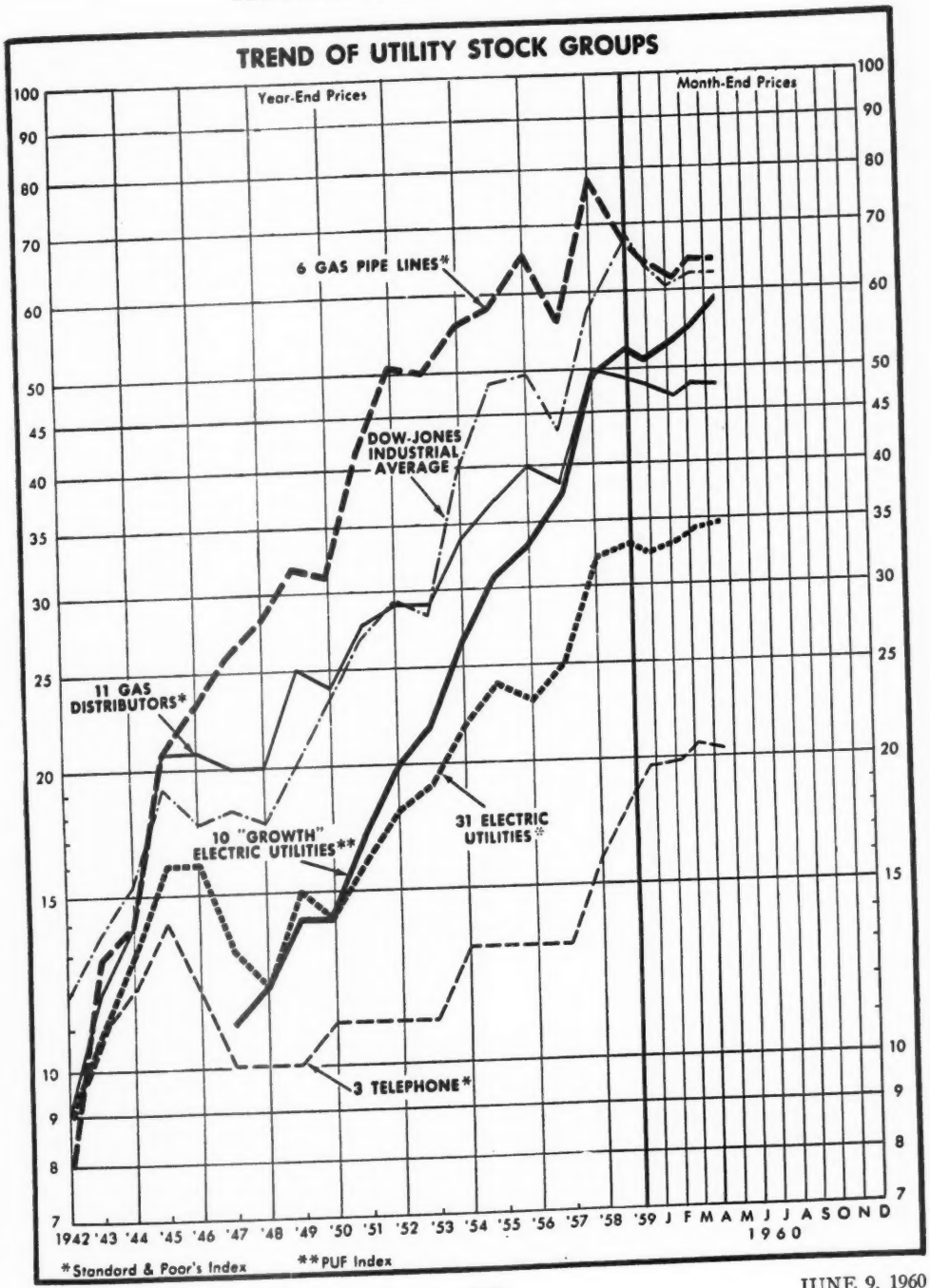
	Kwh. Output (Bill.)		*Percentage*
	1959	*1980*	*Increase*
South Central	66	408	518%
Southeast ..	68	365	437
West Central	7	37	429
Northwest ..	27	101	274
East Central	137	485	254
Southwest ..	51	179	251
North Central	78	270	246
Northeast ..	136	452	232










TREND OF UTILITY STOCK GROUPS
Year-End Prices
Month-End Prices
6 GAS PIPE LINES*
DOW-JONES INDUSTRIAL AVERAGE
11 GAS DISTRIBUTORS*
10 "GROWTH" ELECTRIC UTILITIES**
31 ELECTRIC UTILITIES*
3 TELEPHONE*
100
90
80
70
60
50
45
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35
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9
8
7
1942 '43 '44 '45 '46 '47 '48 '49 '50 '51 '52 '53 '54 '55 '56 '57 '58 '59 J F M A M J J A S O N D
1960
*Standard & Poor's Index
**PUF Index

THESE figures indicate that the industrial renaissance of the South during the postwar period is expected to continue over the next two decades, overshadowing growth in other sections of the country. A somewhat surprising forecast, however, is the relatively small rate of gain for the Southwest—California, Arizona, and Nevada—although these states are currently showing good population gains, with Nevada and Arizona heading the list of growth states. On the other hand, the West Central area, representing the states of Colorado, the Dakotas, and Wyoming, plus parts of Minnesota, Montana, and New Mexico, makes a surprisingly good showing considering the fact that the Dakotas and Minnesota are usually considered rather "slow-growth" areas.

What kind of power will produce the increased output forecast as above? Last year investor-owned utilities had nearly 112 million kilowatt steam capacity and 12.5 million kilowatts in hydro. (Nuclear power production was only about half of one per cent.) By 1970 and 1980 the lineup is expected to be about as follows:

	Million Kw.			*Per Cent*
	1959	*1970*	*1980*	*Increase*
Steam	112	225	417	272%
Hydro	13	20	25	92
Nuclear Power	1	8	39	3,800
Total	126	253	481	282%

The relatively small projected increase in hydro capacity is due to the fact that most of the worth-while hydro sites have already been developed; in future, hydro developments will be designed to meet special characteristics of area loads and there will probably be increased use of pumped storage hydro, such as the project now planned by Union Electric.

REGARDING nuclear power, the figures may prove to be on the conservative side if a "breakthrough" should occur in reducing the cost of nuclear power. Some 26 nuclear projects are now being carried on by 132 electric utility companies, individually or in various groups, involving total investment of $650 million. Seventeen of these projects are for the construction of nuclear power plants with a total capacity of 1.8 million kilowatts, three of which are already in operation. There are also possibilities that electricity may be obtained commercially by direct conversion from heat, chemical, or nuclear sources—without the use of turbines and generators — but this remains problematical.

The Edison Electric Institute also recently issued its twenty-seventh Electric Power Survey, which forecasts the following gains in peak loads for the years 1958-63, by areas in order of growth:

South Central	45%
Southeast	45
West Central	44
Northwest	41
Southwest	36
North Central	28
East Central	28
Northeast	28
U. S. Total	35

Natural Gas Shares Reach New 1960 Peak

STIMULATED by larger dividend payment, natural gas industry common stocks in April recorded new 1960 high prices averaging $47.90 per share, the American Gas Association reports. AGA's summary of data tabulated weekly by Moody's *Public Utilities* showed current dividend rates of $2.13 a share are nearly 5 per cent above levels a year ago and yield a return of 4.45 per cent.

Common shares of natural gas transmission companies reached a 1960 high of $58.06 during the month and yielded 4.37 per cent. Dividends, which averaged

$2.54, were up 4.1 per cent from April, 1959. Distribution company stocks also advanced to new 1960 price levels averaging $40.80 a share, representing a year-to-year gain of 2.7 per cent. Dividend payments climbed for the fourth consecutive month.

At the current rate of $1.80 a share, which reflects an annual gain of 11.1 per cent, these stocks return a yield of 4.41 per cent to investors.

Railroads' Passenger Deficit Shrinking

THE railroads' burden, the passenger service, seems to be lightening a little as a result of the increased attention the problem has received, including the constructive legislation of two years ago, abandonment of some commuter trains in the East, and other factors. (See story in this department, September 10, 1959.) But much remains to be done if the railroads are to be relieved of this incubus and permitted to earn enough money to finance necessary modernization of facilities.

The roads have been able to make money out of their passenger service in only four of the past twenty-four years—the wartime period of 1942-45, when gas for automobile travel was rationed. Following is a summary of the figures prepared under Interstate Commerce Commission rules, which call for allocation to passenger service of not only direct passenger costs, but also a proportionate share of the expenses common to both freight and passenger services:

Years		*Millions of Dollars* Passenger Revenues	Passenger Deficit
Average for	1926-30	$905	*
	1931-35	392	*
	1936-40	419	$249
	1941-45	1,340	121**
	1946-50	972	457
	1951-55	831	667
Year	1956	757	697
	1957	735	724
	1958	675	610
	1959	651	500E

E—Estimated.
*Not available.
**Surplus.

FINANCIAL DATA ON ELECTRIC UTILITY STOCKS

Annual Rev. (Mill.)			*5/17/60 Price About*	*Dividend Rate*	*Approx. Yield*	*Recent Share Earns.*	*% Incr. In Sh. Recent*	*% Incr. 5-yr. Earn. Aver.*	*Price-Earn. Ratio*	*Div. Payout*	*Approx. Book Value*
$324	S	American Elec. Power ...	52	$1.80	3.5%	$2.39Ma	2%	8%	21.8	75%	$24
63	O	Arizona Pub. Serv.	42	1.20	2.9	*2.05Ma	*14	* 6	*20.5	59	18
13	O	Arkansas Mo. Power	20	1.00m	5.0	1.31Ma	D12	3	15.3	76	10
38	S	Atlantic City Elec.	34	1.10	3.2	*1.42Ma	*8	* 9	*23.9	77	12
169	S	Baltimore Gas & Elec. ...	26	1.00	3.8	1.41De	18	8	18.4	71	13
8	O	Bangor Hydro-Elec.	42	2.20	5.2	3.22Ma	17	5	13.0	68	28
7	O	Black Hills P. & L.	32	1.48	4.6	2.57Ja	1	4	12.5	58	22
116	S	Boston Edison	62	3.00	4.8	3.69De	4	4	16.8	81	51
31	A	Calif. Elec. Power	18	.84	4.7	*1.14Ma	*D2	*10	*15.8	74	12
24	O	Calif. Oreg. Power	35	1.60	4.6	*1.81De	*D9	*—	*19.3	88	26
10	O	Calif. Pac. Util.	19	.90	4.7	1.41Ma	18	4	13.5	64	12
76	S	Carolina P. & L.	40	1.32	3.3	2.27Ma	13	6	17.6	58	21
34	S	Cent. Hudson G. & E. ...	21	.92	4.4	*1.43Ma	*10	* 8	*14.7	64	13
26	O	Cent. Ill. E. & G.	36	1.44	4.0	2.24Ma	12	12	16.1	64	15
43	S	Cent. Ill. Light	36	1.52	4.2	2.45Ma	13	10	14.7	62	18
60	S	Cent. Ill P. S.	49	1.92	3.9	2.78Ma	7	7	17.6	69	20
20	O	Cent. Louisiana Elec.	48	1.80	3.8	2.36Ma	7	7	20.3	76	19
42	O	Cent. Maine Power	25	1.40	5.6	*1.90Ma	*20	*—	*13.2	74	21
160	S	Cent. & South West	36	.96	2.7	1.37Ma	5	6	26.3	70	11
12	O	Cent. Vermont P. S.	20	1.08	5.4	*1.37Ma	*D1	* 2	*14.6	79	13

Annual Rev. (Mill.)		(Continued)	5/17/60 Price About	Dividend Rate	Approx. Yield	Recent Share Earns.	% Incr. Earn. In Sh. Recent	% Incr. Earn. 5-yr. Aver.	Price-Earn. Ratio	Div. Payout	Approx. Book Value
140	S	Cincinnati G. & E.	35	1.50	4.3	2.14Ma	17	3	16.4	70	16
8	O	Citizens Util. "B"	13	.56	4.3	.71De	10	6	18.3	79	4
130	S	Cleve. Elec. Illum.	55	1.80	3.3	2.95De	13	9	18.6	61	26
7	O	Colo. Cent. Power	25	.75	3.0	1.13Ma	10	6	22.1	66	11
52	S	Columbus & S. O. E.	45	1.60	3.6	2.66Ma	32	6	16.9	60	24
454	S	Commonwealth Edison	57	2.00h	6.0h	3.72Ma	7	10	15.3	54	33
16	A	Community P. S.	25	1.00	4.0	1.50Ma	13	6	16.7	67	12
85	O	Conn. Lt. & Pr.	22	1.10	5.0	*1.44Ma	*1	* 4	*15.3	76	15
615	S	Consol. Edison	62	3.00	4.8	*3.81Ma	*D4	* 6	*16.3	79	49
258	S	Consumers Power	56	2.60	4.6	3.61Ma	11	5	15.5	72	35
90	S	Dayton P. & L.	49	2.40	4.9	3.22De	—	4	15.2	74	30
53	S	Delaware P. & L.	37	1.14	3.1	1.62Ma	7	9	22.8	70	26
267	S	Detroit Edison	42	2.00	4.8	2.44Ma	10	3	17.2	82	27
156	A	Duke Power	48	1.40i	2.9	2.20Ma	5	10	21.8	64	20
101	S	Duquesne Light	23	1.18	5.1	*1.47Ma	*7	* 5	*15.6	80	10
36	O	East. Util. Assoc.	39	2.20	5.6	2.93Ma	6	6	13.3	75	26
3	O	Edison Sault Elec.	18	.90	5.0	1.30Ma	3	6	14.3	71	9
17	O	El Paso Elec.	36	1.16	3.2	1.76Ma	11	7	20.5	66	11
13	S	Empire Dist. Elec.	28	1.36	4.9	1.89Ma	13	7	14.8	72	16
62	S	Florida Power Corp.	36	.80	2.2	1.18Ma	2	10	30.5	68	12
155	S	Florida P. & L.	59	.96	1.6	2.01Ma	13	17	29.4	48	15
4	O	Florida Pub. Utils.	18	.72	4.0	1.27De	8	9	14.2	56	10
231	S	General Pub. Util.	25	1.12	4.4	*1.65De	*7	* 7	*15.2	68	15
7	O	Green Mt. Power	18	1.10	6.1	1.28Ma	D11	3	14.1	86	12
78	S	Gulf States Util.	33	1.00	3.0	1.42Ma	8	8	23.2	70	11
54	A	Hartford Electric	62	3.00	4.8	*3.69Ma	*2	NC	*16.8	81	43
27	O	Hawaiian Elec.	57	2.50	4.4	3.39Ma	16	7	16.7	74	34
105	S	Houston L. & P.	79	1.60	2.0	3.07Ma	5	6	25.7	52	21
34	S	Idaho Power	51	1.70	3.3	2.45Ma	D1	1	20.8	69	27
104	S	Illinois Power	51	2.00	3.9	2.78Ma	23	14	18.3	72	20
54	S	Indianapolis P. & L.	45	1.70	3.8	2.53Ma	11	9	17.8	67	18
33	S	Interstate Power	19	.90	4.7	1.17Ma	—	4	16.2	77	8
42	S	Iowa Elec. L. & P.	40	1.80	4.5	2.51Ma	14	6	15.9	72	20
51	S	Iowa-Ill. G. & E.	38	1.90c	5.0	2.68Ma	8	4	14.2	71	20
47	S	Iowa P. & L.	35	1.60	4.6	2.06De	1	3	17.0	78	18
40	O	Iowa Pub. Service	17	.80	4.7	1.21Ma	4	4	14.0	66	10
17	O	Iowa Southern Util.	31	1.48	4.8	2.15Ma	2	9	14.4	69	20
64	S	Kansas City P. & L.	53	2.20	4.2	3.18Ma	4	6	16.7	69	29
36	S	Kansas G. & E.	47	1.64	3.5	2.57Ma	D1	7	18.3	64	22
54	S	Kansas P. & L.	35	1.42	4.1	2.36Ma	13	9	14.8	60	17
47	O	Kentucky Util.	38	1.60	4.2	2.73De	15	6	13.9	59	23
8	O	Lake Superior D. P.	25	1.28	5.1	1.71Ma	7	4	14.6	75	17
136	S	Long Island Lighting	38	1.40	3.7	*2.08Ma	*4	* 9	*18.3	67	20
66	S	Louisville G. & E.	43	1.40	3.3	2.61Ma	17	8	16.5	54	21
12	O	Madison G. & E.	25	1.00	4.0	1.88Ma	1	3	13.3	53	39
5	A	Maine Pub. Ser.	21	1.20	5.7	1.50Ma	6	2	14.0	80	14
8	O	Michigan G. & E.	76	1.70j	5.4	5.26Ma	D2	12	14.4	32	29
198	S	Middle South Util.	29	1.00	3.4	1.40Ma	7	7	20.7	71	14
31	S	Minn. P. & L.	33	1.60	4.8	2.22F	D3	5	14.9	72	21
16	S	Missouri P. S.	19	.72f	3.8	1.16Ma	35	5	16.4	62	8
8	O	Missouri Util.	28	1.36	4.9	1.68Ma	—	—	16.7	81	18
46	S	Montana Power	27	.80	3.0	*1.39Ma	*1	* 8	*19.4	58	9
172	S	New England Electric	21	1.08	5.1	1.34Ma	2	3	15.7	81	15
52	O	New England G. & E.	22	1.16	5.3	1.72Ma	3	5	12.8	67	17
105	S	N. Y. State E. & G.	26	1.20	4.6	*1.77Ma	*D9	* 8	*14.7	68	18
285	S	Niagara Mohawk Power	35	1.80	5.1	*2.15Ma	*1	—	*16.3	84	23
104	O	Northern Indiana P. S.	57	2.20	3.8	3.24Ma	12	5	17.6	68	26
170	S	Northern Sts. Power	25	1.10	4.4	1.42Ma	4	6	17.6	77	12
12	O	Northwestern P. S.	21	1.10	5.2	1.66Ma	10	6	12.6	66	12
151	S	Ohio Edison	32	1.48	4.6	2.04Ma	11	6	15.7	73	17
58	S	Oklahoma G. & E.	29	1.12	3.9	1.43Ma	D3	6	20.3	78	11
29	O	Orange & Rockland Utils.	36	1.10	3.0	*1.53De	*20	*14	*23.5	72	14
19	O	Otter Tail Power	33	1.80	5.5	2.42Ma	7	6	13.6	74	24
535	S	Pacific G. & E.	61	2.60	4.3	3.81Ma	2	5	16.0	68	42
58	O	Pacific P. & L.	36	1.60	4.4	*1.93F	*D19	* 4	*18.7	83	23

Annual Rev. (Mill.)		(Continued)	5/17/60 Price About	Dividend Rate	Approx. Yield	Recent Share Earns.	% Incr. In Sh. Recent	% Incr. Earn. 5-yr. Aver.	Price-Earn. Ratio	Div. Pay-out	Approx. Book Value
138	S	Penn P. & L.	26	1.25	4.8	1.76Ma	11	5	14.8	71	13
264	S	Phila. Elec.	50	2.24	4.5	2.92Ma	2	5	17.1	77	26
40	O	Portland Gen. Elec.	29	1.20	4.1	1.87Ma	8	4	15.5	64	18
82	S	Potomac Elec. Power	29	1.32	4.6	*1.90Ma	*16	* 9	*15.3	69	18
102	S	Pub. Serv. of Colo.	54	1.90	3.5	2.79Ma	7	6	19.4	68	27
369	S	Pub. Serv. E. & G.	38	1.80	4.7	2.33Ma	D2	4	16.3	77	24
88	S	Pub. Serv. of Ind.	44	2.10	4.8	2.73Ma	D5	3	16.1	77	27
34	O	Pub. Serv. of N. H.	19	1.04	5.5	1.37Ma	5	2	13.9	76	14
17	O	Pub. Serv. of N. Mexico	35	1.00	2.9	1.51Ma	—	10	23.2	66	12
32	S	Puget Sound P. & L.	30	1.44	4.8	2.11Ma	4	9	14.2	68	23
72	S	Rochester G. & E.	44	1.80o	4.1	*3.15Ma	*6	* 7	*14.0	57	30
10	S	St. Joseph L. & P.	31	1.60n	5.2	2.28Ma	31	6	13.6	70	18
71	S	San Diego G. & E.	27	1.12	4.1	1.77F	17	8	15.3	63	18
12	O	Savannah E. & P.	30	1.12	3.7	1.30Ma	D4	1	23.0	86	12
12	O	Sierra Pacific Pr.	39	1.60	4.1	2.61Ma	28	14	14.6	61	17
280	S	So. Calif. Edison	57	2.60	4.6	3.87Ma	11	6	14.7	67	42
56	S	So. Carolina E. & G.	41	1.40	3.4	1.89Ma	2	6	21.7	74	19
8	O	Southern Colo. Pr.	18	.90	5.0	1.09Ma	D30	—	16.5	83	13
297	S	Southern Co.	45	1.40	3.1	1.97Ma	12	9	22.8	71	17
21	S	So. Indiana G. & E.	33	1.60	4.8	2.54Ma	4	2	13.0	63	21
9	O	So. Nevada Power	34	1.10	3.2	1.97Ma	23	5	17.3	56	15
4	O	Southwestern E. S.	17	.72	4.2	1.01F	2	5	16.8	71	7
47	S	Southwestern P. S.	23	.84	3.7	1.08Ma	17	7	21.3	78	7
36	A	Tampa Electric	35	.72	2.1	1.00F	14	7	35.0	72	10
183	S	Texas Utils.	76	1.92	2.5	2.94Ma	5	9	25.8	65	21
47	S	Toledo Edison	17	.70	4.1	1.09Ma	D6	2	15.6	64	9
20	O	Tucson G. E. L. & P.	30	.80	2.7	1.25Ma	25	8	24.0	64	9
147	S	Union Electric	36	1.80	5.0	*2.01Ma	*19	* 5	*17.9	90	17
39	O	United Illum.	28	1.38	4.9	*1.75Ma	*D1	* 1	*16.0	79	16
6	O	Upper Peninsula Pr.	29	1.60	5.5	1.82De	—	—	15.9	88	19
50	S	Utah Power & Light	35	1.32	3.8	1.85Ma	2	5	18.9	71	19
151	S	Virginia E. & P.	45	1.20	2.7	1.74Ma	3	9	25.9	69	17
36	S	Wash. Water Pr.	39	2.00	5.1	*2.50Ma	*D2	* 7	*15.6	80	29
152	S	West Penn Elec.	38	1.70	4.5	2.40Ma	5	5	15.8	71	18
82	O	West Penn Power	59	3.00	5.1	3.47De	6	3	17.0	86	26
13	O	Western Lt. & Tel.	43	2.00	4.7	3.23F	11	6	13.3	62	27
32	O	Western Mass. Cos.	24	1.20	5.0	1.65Ma	D5	—	14.5	75	18
134	S	Wisc. El. Pr. (Cons)	37	1.80	4.9	2.87De	36	7	12.9	63	27
48	O	Wisconsin P. & L.	33	1.48	4.5	2.36Ma	10	7	14.0	63	21
46	S	Wisconsin P. S.	28	1.30	4.6	1.97Ma	8	5	14.2	66	17
		Averages			4.2%		7%	6%	17.3	70%	
		Foreign Companies									
217	S	Amer. & Foreign Pr.	8	$ .50	6.3%	$1.30De	D33%	0%	6.1	38%	$32
129	A	Brazilian Traction	4	—	—	.64De	D58	—	6.3	—	28
97	A	British Col. Pr.	33	1.40	4.1	2.48De	27	9	13.3	56	36
20	O	Calgary Power	19	.40	2.2	.96De	8	18	19.8	42	6
18	A	Gatineau Power	35	1.50	4.3	1.98De	D22	—	17.7	76	21
52	O	Mexican L. & P.	16	1.00b	6.3	1.88De	11	18	8.5	53	42
16	A	Quebec Power	33	1.60	4.8	2.41De	3	9	13.7	66	26
77	A	Shawinigan Water & Pr.	27	.68	2.5	1.45De	D10	8	18.6	47	19

*Deferred taxes resulting from liberalized depreciation are not normalized. If they had been normalized the price-earnings ratio would be higher, and the rate of increase in share earnings would be smaller. **On average shares. D—Decrease. NC—Not comparable. A—American Stock Exchange. O—Over-counter or out-of-town exchange. S—New York Stock Exchange. Ja—January; F—February; Ma—March; Ap—April; My—May; Je—June; Jy—July; Au—August; Se—September; Oc—October; N—November; De—December. b—Also 5 per cent stock dividend May 1, 1959. c—Also 5 per cent stock dividend June 10, 1959. f—Also stock dividend of one-half per cent quarterly. h—Also 2½ per cent stock dividend December 1, 1959, included in yield. i—Also 15 per cent stock dividend January 29, 1959. j—Also 3 per cent stock dividend (paid each year end) included in the yield. k—Also 5 per cent stock dividend February 20, 1959. m—Also 5 per cent stock dividend June 15, 1959. n—Also 10 per cent stock dividend November 20, 1959. o—Also 3 per cent stock dividend January 25, 1960.

What Others Think

Annual Convention of American Public Power Association

IN early May the American Public Power Association held its seventeenth annual convention at the Shoreham Hotel in Washington, D. C. The three-day conference had as its theme "Public Power—Democracy at Work." APPA is a national trade organization representing some 1,000 municipal and other types of local and publicly owned electric utilities in 42 states and Puerto Rico.

The convention was addressed by a large number of government officials, as well as by representatives of the electric industry. Workshops and panel discussions were conducted and a large display of electrical equipment was on view.

The keynote address, "Low Cost Power: Force for Regional Growth," was delivered by Brooks Hays, director of TVA, and former member of Congress. He stated that since becoming a director of TVA his conviction had been confirmed that public ownership is a good and necessary part of the electric industry. Without contending that it is any accurate "yardstick," he said that public ownership is a "yeast" of competition in a field where monopoly could easily lead to inertia. Regarding public ownership of electric utilities, Mr. Hays said:

. . . public ownership is not enough. There are other essentials. The manner in which ownership is made to express pride and responsibility in the enterprise itself is something to engage our best thought. We must be aware that the governmental mechanisms of which we are justly proud, and of which we are a part, are not self-operating.

No magic propulsion carries knowledge of their functions and ideals adequately into the region's daily life. Public service is a more meaningful phrase than public ownership. And though it is imperative that the ownership be clearly acknowledged, it is strengthened when our policies and actions equate public ownership with the public interest.

He believes that power at the lowest possible rates to the consuming public, consistent with sound finances, should be the aim of publicly owned systems. He views the publicly owned power systems as a spur to other segments of the industry.

DR. PAUL J. RAVER, the head of Seattle City Light, and president of the APPA, reported that almost 2,000 local publicly owned systems now serve approximately 23 million people in 48 states

and Puerto Rico. Another 16 million are members of rural electric co-operatives. In 1958, he said, local public systems had an estimated $5.3 billion investment.

Dr. Raver foresaw a total plant investment of $40 billion for local systems by 1980, assuming that the rate of growth will remain consistent with that of the past decade. In his opinion local public power agencies benefit all the power consumers of the nation by production of low-cost power and by providing an example which stimulates private companies to keep rates down. Such activity is often more effective in keeping rates down than regulation, he said.

The meeting of the nation's electric power needs may well be one of the important factors in determining our place in tomorrow's world. Dr. Raver stated. He called upon the industry to join forces with state legislatures and the U. S. Congress to promote the economic health of the nation. Such economic health can be assured if legislation is enacted which will permit the industry to provide adequate quantities of low-cost power to all users.

SECRETARY of the Interior Seaton expressed his confidence that the electric industry could meet the continued demands placed on it. He said that it took 10 pounds of coal to produce a kilowatt-hour of electricity in 1882, while last year nine-tenths of a pound produced the same amount of energy. Such savings have come about through more efficient generation, higher transmission voltages, advances in plant design, and more such advances are still to come. Within less than ten years the United States has progressed from a period of electricity shortage to one of plenty. The foundation has been laid for an ever-expanding future.

Secretary Seaton attributes the advances made to the climate which has permitted the development of water resources. This "climate," he believes, was established by the Eisenhower administration. He states that the present administration had ended the "futile and foolish" federal policy of pre-emption of all water-power sites and had removed controls which had made it difficult for industry to design and obtain necessary equipment.

The Eisenhower administration believes, Secretary Seaton stated, that neither private nor federal interests have an exclusive right or responsibility for the construction of hydroelectric generating facilities.

He said:

> We do believe that all licensed nonfederal development must be consistent with the overall requirements of wise and multipurpose use of our natural resources. When nonfederal projects meet that test, why then should the federal government insist on preempting the site and preventing either private or public organizations from making their contribution in the electric power field?

IT was indicated by Mr. Seaton that he would support the right of any state or locality to make its own choice regarding the use of public, private, or federal power. He stated further than he would not support the "fallacious and dangerous" proposition that the federal government has a "public utility" responsibility. Such a position, he felt, would only lead to a federal monopoly and the complete lack of local determination and control. His concept of the federal government, in relation to the power field, is that the government should step in only

"THAT HARRY—SLIPPED OUT EARLY AGAIN TONIGHT!"

in the national interest and then only when nonfederal agencies cannot or will not do the job.

In conclusion he warned that if the private or federal, could monopolize the control of the electric power field, on that day the public utility industry would begin to decline and the public power groups would lose their identity.

A BLUEPRINT for future development of Pacific Northwest water resources was proposed by Mrs. Maurine B. Neuberger, U. S. Senate candidate from Oregon. Mrs. Neuberger is the wife of the late Senator from Oregon. She called for an early agreement with Canada for development of the Upper Columbia river and the creation of a federally chartered corporation to finance new dams and transmission lines from power revenues.

Mrs. Neuberger called for the development of hydroelectric potentials in view of the program of development under way in the Soviet Union. She stated that while the United States was cutting in half its federal investment in the develop-

ment of rivers the Russians have accelerated their program. She pointed out that it was ironic that Russia should turn to the development of her streams just at the time that the Eisenhower administration became inhospitable to the idea of federal multipurpose river projects.

THE subject of "Small Size Nuclear Power Plants" was the basis of the address delivered by John A. McCone, chairman of the Atomic Energy Commission. Mr. McCone played down Russia's advances in the power-generating field. He pointed out that such advances are to be expected in any society which is undergoing the transition from candle and oil lamps to the use of electric light. The most reliable forecasts estimate that in 1970 the U. S. will produce about 1.5 trillion kilowatt-hours of energy—600 billion more than the most optimistic prediction for the Soviets.

Mr. McCone cited the achievements already made in atomic generation of electric power, but he pointed out that diligent effort must continue to solve the problem of producing low-cost competitive nuclear power from small- and medium-size units. The majority of the projects now completed or under construction are plants of more than 50,000 kilowatts. Small plants are now expensive to construct. Low temperatures and low pressures produced by nuclear plants require larger and more costly turbines. Comparatively, the atomic generator and its auxiliaries cost about 15 per cent more than equipment used in conventional plants. The nuclear reactor alone is four to five times more expensive than the boiler which it replaces.

Mr. McCone believes that after a "shakedown" period a nuclear plant could be operated and maintained for about the same amount as a conventional plant of similar size. Fuel costs for the nuclear plant will be lower than in a conventional plant. However, as it stands today, this lower cost does not offset the very high capital charges that must be absorbed.

Simplified design, standardization, and improved techniques of containment—*i.e.,* shielding—are looked upon as the most promising areas for the reduction of plant costs. If such steam can be produced at economical levels the problem of expensive generating units will be licked. The AEC intends to build such a superheat reactor in Puerto Rico, and in South Dakota a 66,000-kilowatt plant is already well advanced. These projects may solve many of the existing superheat problems.

THE problem of location of nuclear generating facilities is of special significance to the electric industry. Mr. McCone stated that the AEC is now developing criteria, too, as an industrial guide. Each plant, however, raises separate and independent considerations with respect to the reasonable safety which must be afforded to the public. A tentative general statement of criteria has been issued by the commission, and, as more experience is gained, this list will be revised and modified.

Mr. McCone outlined the various programs now under way to produce low-cost power from small nuclear reactors. Regarding these projects, he stated:

> . . . As our laboratories develop technology indicating improvements leading to lower-cost power, we will incorporate these improvements in new demonstration and prototypes.
>
> Our criteria will be very simple: Will this idea contribute to the goal of cheaper and, therefore, more competitive nuclear power in the size range under consideration?

We do not believe in building plants solely for the sake of building plants. Neither do we believe in building plants just for the sake of trying out a new idea.

The commission must insist that a potential development be an important building block in its program. If this can be proven, we will go forward. If it cannot, we will continue further research and development in our laboratories in hope that by so doing the economic value of the concept will become apparent.

THE expense involved in translating of scientists' and engineers' ideas into working realities was demonstrated when Mr. McCone noted that expenditures of $300 to $400 million are required to bring an idea from the laboratory to the status of a finished reactor which will produce competitive power. The problems associated with the development of nuclear power, Mr. McCone stated, do not concern the theoretical arguments about the place of public and private power in our society and economy. Such arguments would only result in the slowing down of the development itself. He stressed that the advances made by the commission and the technological know-how will be shared with one and all on equal terms.

Senator Aiken (Republican, Vermont) spoke to the convention on the general subject of "Looking Ahead in the Field of Public Power." The forecast for the next ten years was drawn from *Electrical World's* "Survey of the 60's," and "Research and Development." The Senator pointed out that the question how public and co-operative systems will participate in the growth and technological advances will determine if the nation is going to be protected from a gigantic private power monopoly, embodied in a "power-company-dominated, nation-wide grid." He looks upon multiple-purpose river programs, TVA, and the REA as powerful deterrents to such a power monopoly, and cautioned that in the years ahead the public power industry must be on guard to preserve the gains already made.

THE general manager of the American Public Power Association, Alex Radin, delivered a report on the achievements of APPA in the past year. He stated that the APPA now represents more than 1,000 municipal and other local publicly owned electric systems and that 40 new members were gained during the past year. The APPA has expanded its activities in the field of public relations and a monthly newsletter is now published for association members, in addition to the magazine *Public Power*.

During the year past, the atomic energy service of APPA joined with the National Rural Electric Co-operative Association in sponsoring an information meeting on the Atomic Energy Commission's invitation to consumer-owned utilities to submit proposals on pressurized water reactors.

Mr. Radin noted that a large share of the time and effort of the APPA staff had been devoted to preparing for hearings by the House Ways and Means Committee on tax proposals which would affect all publicly owned electric systems.

Concluding his report to the convention Mr. Radin stated that the industry must continue to seek an abundance of low-cost power not for "self-aggrandizement" but for the important service rendered to the citizens of this nation.

—C. M. B.

Electric Utility Relocation Expenses

AUSTIN GAVIN, general counsel of the Pennsylvania Power & Light Company, Allentown, Pennsylvania, recently presented a paper on the subject of "Recovery of Electric Utility Relocation Expense" to the Edison Electric Institute Right of Way Conference.

The expansion of all projects, such as highways, airports, and flood-control projects, creates an increased demand for electricity. However, such projects also result in the need for extensive relocation of utility facilities. Mr. Gavin estimates that in 1960 relocation costs due to highway construction will come close to $135 million. When a utility's facilities are on a private right of way and must be relocated, due to some public work project, the utility is "clearly entitled" to reimbursement since federal and state governments cannot confiscate property without compensating the owner for his loss. It is established, Gavin stated, that where utility facilities on a highway are required to relocate (in the absence of a statute), the utility must bear its relocation expenses. This latter rule is based on the proposition that the utility has been permitted to use the highway only so long as it does not burden or interfere with the primary purpose of the highway.

Gavin notes that the power of the government to require relocation to another area within the highway and without compensation is limited to situations where the move is required by the exercise of a governmental function; it does not extend to relocations caused by the government acting in a proprietary capacity. He states:

> . . . The leading case supporting this proposition is Los Angeles *v.* Los Angeles Gas & Electric Corp. (1919) 251 US 32, 40 Sup Ct 76, where it was held that the city could not require the utility to assume the expense of relocating its facilities in order to accommodate the construction of a municipal electric system. . . .

MR. GAVIN observes that in recent years there has been a growing feeling that the common-law rule requiring utilities to take on the relocation of facilities is both antiquated and inequitable. Prior to 1956 California, Connecticut, New Jersey, Vermont, and Wisconsin had enacted legislation providing for reimbursement in whole or in part for such moves on certain highways. In 1954 Congress refused to include a section in the Federal-Aid Highway Act which would have authorized relocation expenses to be included as part of the highway cost.

In 1956, a compromise was worked out in which a state which pays a relocation fee (assuming that such payments are not a violation of the laws of the state or any legal contract between the state and the utility) will be reimbursed for the government's part of the expense. As a result of this, legislation has been introduced in 40 states providing for reimbursement in connection with federal-aid highway projects. In 18 states these proposals have been enacted into law.

Six states (Idaho, Massachusetts, Montana, New Mexico, Tennessee, and Utah) have statutes that provide for reimbursement on all federal-aid highways. Tennessee's statute, however, provides that reimbursement can take place on roads other than interstate systems only when undue financial hardship is involved. Reimbursement in the other 12 states is restricted to payments when interstate systems are involved. Delaware, Florida, Illinois, Iowa,

"WHEN THEY SAID WEAR RUBBER GLOVES, THEY DIDN'T MEAN *ALL* THE TIME!"

Maine, Minnesota, Nebraska, North Dakota, Oklahoma, Texas, Virginia, and Washington have such laws. Regarding legislative activity in this field, Gavin states:

> Constitutional attacks have been made on a number of these laws. The box score of this phase of the problem at the present time stands as follows: Such laws have been declared valid in Illinois, Maine, Minnesota, New Hampshire (an advisory opinion but the legislature failed to pass the bill), and Texas. They have been held invalid in Idaho, New Mexico (this decision was with respect to the 1957 law but in 1959 the law was re-enacted to overcome the constitutional difficulty), and Tennessee. Court tests are pending in the supreme courts of Utah, Montana, and North Dakota.

THE proper measure of recovery, Gavin believes, is again bound up with the question of relocations on private

or public rights of way. There is a different legal basis when private property is involved as compared with reimbursements for utilities located on a public right of way.

Gavin's discussion is limited to the proper measure of recovery for a utility from private right of way. He notes that in general it is argued that the intent of legislators has been to put the utility in the same position it would have been had it not been forced to move. Agreement is not unanimous on the method of determining the cost of substitute facilities and the "equivalence" which puts the utility in a position that it would have been had it not been forced to move.

In the most simple cases, there is a large degree of agreement. Such cases would exist when a utility would be moved from one right of way to another. In such instances compensation requires payment in full for the entire cost of the new right or way, labor, transportation, and material costs for installing at the new location. Even in a case where existing facilities cannot be relocated but must be removed and rebuilt there is a large area of agreement.

The first major snag in determining compensation arises from the question of whether there should be a credit for depreciation. Gavin breaks his discussion of depreciation into the following three major sections: (1) basis for depreciation credit; (2) no depreciation credit; (3) depreciation credit for major and independent segments.

In relocating a facility no "betterment" is involved. However, those who favor the depreciation credit position do so because of the belief that the new facility—even if it is an exact duplicate of the former plant—will have an extended life, above and beyond that of the plant it is replacing. Proponents thus argue that unless there is a depreciation credit the utility ends up in a better position than before the relocation. Gavin points out that the means of determining the amount of depreciation varies from "expert" to expert and that such differences tend to bewilder the "nonexpert." Assuming that a ratio or percentage is arrived at, then the question arises as to whether the percentage credit should be applied to the original cost of the old plant or to the cost of the replacement.

Regarding this disparity of opinion, Gavin states:

> Analysis of the mechanics and the reasoning, or lack of it, for each of the many different views is beyond the scope of this paper. This much is clear. Even among those who agree that a depreciation credit is allowable there are substantial differences in how the amount of the credit is to be determined.

The second section of the depreciation discussion is devoted to the view that no depreciation credit should be allowed. This position is predicated on the belief that the utility has received only the equivalent of what it had before the move and that since neither company nor customer has received any benefit from the move, neither should they pay for part of the expenses involved in the move itself. Of course this position discounts the fact that there may be an extended life expectancy for the newly located plant. Gavin observes that less than 20 per cent of all utility property retirements are due to physical deterioration. The remaining 80 per cent of retirements is attributed to such factors as actions on the part of governmental authority (such as changes in utility system operation rendering the facility unnecessary), whether catastrophe, obso-

lescence, etc. Gavin notes that it has been the experience of the Pennsylvania Power & Light Company that only 25 per cent of its pole replacements are due to physical condition. It is his contention, therefore, that in 80 per cent of the cases the service life of a relocated facility will not be extended as the result of such relocation.

The last section on depreciation examines the contention that a depreciation credit is only applicable when a move involves a major and independent segment of the utility system. This is the official view of the United States Bureau of Public Roads. It is stated by Gavin that in these days of integrated and interconnected utility systems it would be very difficult to qualify under this view. The reason for allowing a credit for depreciation in such cases is the fact that the new facility can be expected to provide a full and complete service life after the date of its installation. Further, this service life will not be abbreviated by the shorter remaining service life of some other facility with which the replacement is associated.

THE Bureau of Public Roads, according to Gavin's analysis, tends to the "no depreciation" position except that the bureau does contemplate some circumstances where a utility would receive a benefit—such as where a major and independent segment is involved which would have a predictable increase in servis a part.

Gavin believes that although the bureau policy directive (Policy and Procedure Memorandum 30-4) has introduced some problems for the electric industry, the difficulties associated with dealing with depreciation credit are avoided in most cases. By requiring a credit only in the case of a "major and independent segment," the bureau has brought increased attention to the basis for allowing a credit in the first place.

Gavin states:

> . . . Thus, the bureau's position is clear, if it cannot be shown that the relocation involves a major and independent segment which *will provide an extension in service life,* there is no *benefit* and no credit is required. This affirms the validity of the conclusion that it is predictable that in most cases the new relocation *will not live* any longer than the older one would have. The correctness of this can be demonstrated by examples from each utility's experience.

GAVIN concludes that a utility should be satisfied that it is getting a benefit before it agrees that a depreciation credit is applicable to a given relocation. He stresses the fact that in many cases retirement will result from causes other than deterioration and no benefit and no basis for a depreciation credit will be found. It is the responsibility of the utility industry to bring these ramifications to the attention of government agencies since those unfamiliar with utility operations may tend to overlook them. The Bureau of Public Roads' position that the controlling factor is whether or not the relocation can be expected to result in an extension of service life has put the utilities in a better position to urge the "no depreciation" concept in other quarters.

Civic Organizations Help the Community

SOME enlightening comment on the value of charitable and civic organizations from the viewpoint of a utility official were recently made by J. T. Jones, vice president and general manager of The Empire District Electric Company, Joplin, Missouri, at the Oklahoma Utilities Association meeting of the accounting section earlier this year. He is also a member of the Joplin city council.

Mr. Jones warned against the tempting pitfall of forgetting about established businesses of a town and the concentration on getting new businesses. He conceded the importance of aggressively striving to attract new business, but he stressed the fact that it was the old, established businesses that were the backbone of any community. They employed people, paid taxes, supported community activities, etc.

Speaking of civic groups, Jones had this to say:

> . . . Let's take a look at what the civic groups mean to the elected representatives of the city—the city council. A city council has many time-consuming, trivial matters to take care of, and, at least in the manager-council form of government, the councilmen do not receive pay and, therefore, must make their livelihood at a business. They do not have the time to serve as city planners, idea developers, and pulse feelers and fund raisers. They certainly contribute more than their fair share of time to their community in their normal functions in the council chamber.

WHO, then, will do the city planning, idea developing, etc.? The civic group membership, generally speaking, includes some of the ablest men's brains in the community—men who are willing to give it their time and talents. They will bring to the city government, Jones said, recommendations, support, plans, and will represent public opinion in discussions with the council. They—as a group with no ax to grind—can and will defend the government against unwarranted attacks by disgruntled citizens. A city government and a utility which will work hand in hand with the civic organizations in the community, and solicit their ideas and their support, will reap the rewards of community harmony and development.

Civic groups, too, in addition to their contributions in city planning and formulation of public opinion, are in most cases highly responsible for bringing business into the community. They also represent the orderly, progressive thinking of the community. Jones stated:

> . . . The civic groups give us our thinking power, or the brain; the business gives us the body that holds the community together; and my next subject gives us the heart. That is the charitable organizations of the community. Probably one of the greatest problems in our community, as well as other communities, are the indigents.

CARE of indigents, the aged, the unemployable, the young, and the delinquents, Jones said, is helped to a great degree by charitable groups that band together to provide homes for the aged and nursing institutions. The charitable organizations are usually the unsung heroes of our cities. They are run as a rule by kind and dedicated people that generally do not involve themselves in matters of franchises and political issues that are all important to utilities.

The March of Events

Atomic Waste Sites Picked

TEMPORARY burial grounds for solid radioactive wastes have been established on the Atomic Energy Commission's National Laboratory Grounds at Oak Ridge, Tennessee, and at the reactor testing station near Idaho Falls, Idaho, according to an AEC announcement. These atomic waste sites will be available immediately for disposal of atomic wastes for licensed operators, the commission declared.

Types of radioactive wastes which are included in the AEC's land burial policy include broken glassware, paper wipes, rags, ashes, animal carcasses, laboratory equipment, and other matter. Liquid wastes are stored in specifically designated underground storage tanks at Savannah River, South Carolina, Hanford, Washington, and Oak Ridge and Idaho Falls. The AEC will designate later permanent sites for burying atomic wastes to serve the various parts of the country.

Gas Industry Will Double

THE president of the American Gas Association, Wister H. Ligon, at the opening session of the combined distribution and transmission conference in May, estimated that the 1,450 U. S. gas utility and pipeline companies would double their construction outlays and expand the nation's gas network by nearly 50 per cent during the sixties. He said gas utilities and pipelines would spend at least $28.3 billion for expansion in the next ten years. Expenditures in the fifties were $14.2 billion, he said.

Gas industry forecasts, Ligon reported, indicate customers will increase by an estimated 40 per cent in the next ten years. He said the industry would have to add more than a quarter-million miles to its gas network, increasing it from today's 596,000 to 878,000 miles by 1970. He pointed out that expansion was vital to the industry in order to increase the number of its customers inasmuch as most companies are operating at capacity.

California

Gas Rate Hike Asked

PACIFIC GAS AND ELECTRIC COMPANY has asked the California Public Utilities Commission to approve a gas rate increase which would provide $26.6 million in additional annual revenue.

The company requested that one-third of the rate boost go into effect August

25th, date of a scheduled hike in wholesale prices by its supplier, El Paso Natural Gas Company.

Of the total requested boost in revenue, $9.8 million would go to El Paso and $16.8 million to meet other rising costs, PG&E said. It asked for the remaining two-thirds "as soon as possible."

The company has obtained four increases since 1954. Gas and electric rates have climbed steadily since 1950, after several years of rate reductions. The company pointed out that even if the commission grants the present request, householders will be paying the same rate for use of gas and electricity as paid in 1936.

Illinois

Boiler Fuel Sale Complaint

ATTORNEYS for the Peoples Gas Light & Coke Company have asked the Illinois Commerce Commission to dismiss a complaint filed by coal interests seeking to halt sale of gas as interruptible boiler fuel. The complaint by coal interests states that rates charged for this service are "fixed at a price below coal" and that as a result coal sales have been adversely affected.

Peoples Gas maintains that rates for interruptible service are higher than the incremental cost of providing the service and below the price of competitive fuels in accord with standards set by the Illinois supreme court in the Produce Terminal case in 1953. Peoples pointed out that if it could not dispose of surplus gas to interruptible boiler fuel customers, the loss in revenues would be reflected in increased cost of service to its firm residential, commercial, and industrial customers. It said such a result would be contrary to the interests of the gas-consuming public at large.

Indiana

Appeals Held Nontransferable

THE state supreme court has ruled that appeals from decisions of the Indiana Public Service Commission cannot be transferred to it but must be decided by the appellate court.

In an opinion written by Judge Arch N. Bobbitt, the supreme court said the appellate court cannot vote evenly on an appeal from the commission and then transfer the case to the high court for determination.

The appellate court in September, 1958, had been asked to void a commission order for a long-distance telephone rate increase for 180 companies which had not asked for the boost.

The rate hike was granted to Indiana Bell Telephone Company in an order which said all telephone companies in the state could raise their rates to match Indiana Bell.

Thereupon Public Counselor George L. Diven appealed the ruling to the appellate court. When it voted 4-4 on the case, it was transferred to the supreme court.

Nebraska

FPC Authorizes Gas Sale

THE FPC has authorized five independent producers to sell natural gas to Northern Natural Gas Company of Omaha, Nebraska. The agency conditioned its approval on the basis that the five producers limit their charge to 17 cents per thousand cubic feet.

The producers had wanted to charge 20 cents. They are Gulf Oil Corporation, Shell Oil Company, Barbara Oil Company, Jacquelin Anderson, and Pickrell Drilling Company. Commissioner William R. Connole dissented from the Federal Power Commission's decision.

Connole contended the 17-cent price was too high, arguing that recent sales in the area from which the gas would be drawn had been running at 15 cents or less.

New York

State Urged to Spark Atom Program

IN a move to turn over more detail work on atomic power to the states, the federal government has asked New York to take the lead in a new federal-state program. Under this program the states would assume some degree of responsibility for the peaceful uses of atomic power. Both the AEC and President Eisenhower have written Governor Rockefeller asking his co-operation.

The President's letter stressed the fact that there was a need to increase the functions and responsibilties of the states as a safeguard against excessive centralization of governmental power. AEC expressed the hope that New York would serve as an example for other states in handling the civilian aspects of atomic energy. An amendment to the Atomic Energy Act permits the states to control, within their borders, radioactive isotopes, natural uranium and thorium, and fissionable materials amounting to less than a critical mass.

Governor Rockefeller has promised New York will co-operate with the federal government and said he would press for an agreement that would serve a "valuable precedent in safeguarding the public health and safety and in introducing into the regulatory control of atomic activities the competence and high regard for the public interest which exists among state authorities."

Washington

PUD's Plans Attacked in Petition

PACIFIC NORTHWEST POWER COMPANY has filed a petition charging the Washington Public Power Supply System with "conspiracy" to block the private utility group from needed power supplies.

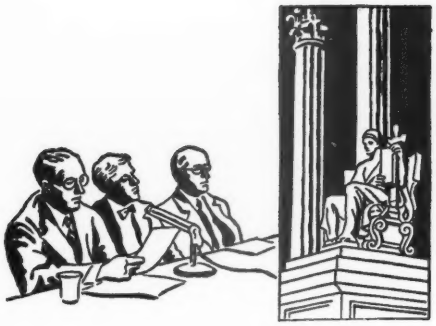
Power Supply System is an organization of nine public utilities whose proposal for a Nez Perce dam snagged plans of PNP for a dam on the Salmon river at the High Mountain Sheep site.

The conspiracy accusation was contained in a petition filed with the Federal Power Commission, asking it to intervene against the PUD's in their proposal.

PNP, a combination of four private utilities, including Washington Water Power Company, said the public power group "has not qualified and cannot in the future qualify under the Federal Power Act as an applicant for a license."

The petition also charged that the PUD group conspired with the Northwest Public Power Association and the National Hells Canyon Association to "hamper and delay" a hearing on PNP's High Mountain Sheep application.

PNP contends the Nez Perce proposals are for "an inferior project" and opposed the long delay in hearings asked by the public power group.



Progress of Regulation

Trends and Topics

Contributions by Public Utility Corporations to Charitable Enterprises

From the early view, in the nineteenth century, that philanthropic contributions by corporations were improper and ultra vires, the common law has come to recognize such contributions not only as legitimate expenses of business but as the discharge of an obligation. The legislatures of more than 40 states now have authorized corporate donations for philanthropic purposes. But there is still a difference of opinion as to the propriety of charging such donations as an operating expense of a public utility corporation. This question was discussed in Public Utilities Fortnightly, November 10, 1955, at page 830.

Right to Make Donations

Last year a complaint was filed against Illinois Bell Telephone Company challenging the legal authority of the company to "give away" $290,000, or any sum whatever, or to donate the paid services of its executives and employees, to the Community Fund-Red Cross Crusade of Mercy campaign or any other organization or institution. The Illinois commission, after an extensive discussion of the question, dismissed the complaint. The essential character of nation-wide corporate giving to Community Chests and United Funds was recognized.

The commission was satisfied that the work of these welfare and health agencies is of vital importance to the maintenance of community stability, that corporate contributions inure to the ultimate benefit of the donors through the building of good will and the strengthening of the economic well-being of the community, and that charitable contributions by public utilities may be a lawful and proper item of expense. A public utility company is dependent on the economic and social strength and well-being of the community it serves, and by helping to prevent delinquency and social decay, such contributions serve to deter vandalism and damage to the utility plant and equipment. Although the commission was not ruling on the question of allowance of such

donations as an operating expense, it expressed the view that the company was not overcharging its subscribers $290,000, or any other amount, by reason of its contributions (32 PUR3d 385).

Even in states where contributions have been disallowed as an operating expense the policy of making such gifts has been approved. The Washington commission, for example, said that its disallowance of donations as an operating expense was not to be construed as prohibiting the making of such donations. The owners of the utility are entirely free to make as many and as large contributions as they may desire (8 PUR NS 293, 312). The Texas Railroad Commission disallowed donations as an operating expense but said it was in hearty accord with the desire of everyone who is financially able to make contributions to charity (20 PUR NS 89, 121).

Allowance as an Operating Expense

Regulatory authorities have disallowed these contributions as an operating expense in California (21 PUR3d 48), Michigan (29 PUR3d 133; 32 PUR3d 395), Missouri (20 PUR3d 195), Pennsylvania (16 PUR3d 207), West Virginia (27 PUR3d 365), and Wisconsin (23 PUR3d 388). They have continued the policy evidenced in several cases mentioned in PUBLIC UTILITIES FORTNIGHTLY, November 10, 1955, at page 830.

The New Jersey commission, subsequent to the ruling by the state supreme court (100 PUR NS 379) approving allowances as reasonably necessary in the rendition of service, disallowed a claim for charitable contributions because it was unable to find that the items had an "effect upon the creation of the service and are thus reasonably necessary in the rendition of service to the consumer." (24 PUR3d 181.) The court later remanded the case for further findings as to the rate base, without making a ruling on the question of donations (29 PUR3d 87).

The Delaware supreme court, however, in reviewing the Diamond State Telephone Company rate case, concluded that modest contributions to important local charities made to preserve community good will should be allowed as an operating expense. It agreed that the commission might disallow them if the contributions were unreasonably large or if they were not related to the fostering of the good will of the company in the locality in which it operated (28 PUR3d 113).

The New Hampshire supreme court similarly ruled that charitable contributions in modest amounts and for public purposes may properly be allowed as a business expense of an electric company. The commission had expressed the view that such contributions are vital to establish and improve public relations and are in a category with advertising (30 PUR3d 61, upholding commission decision 27 PUR3d 113).

The Wyoming commission, in fixing rates for Mountain States Telephone & Telegraph Company, said that this company along with most all other companies—regulated and unregulated—made contributions to charities such as the Community Chest, Red Cross, Heart Association, Wyoming TB Asso-

ciation, and perhaps other nondenominational organizations. The company contended that it was obligated as a citizen in the respective Wyoming communities to carry its share of the contributions to such charitable institutions. The commission said that while it was aware of the fact that regulatory commissions reach divergent views with respect to including this expense and it would be justified in allowing or disallowing these contributions, it had examined in detail the contributions made and found them to be reasonable, and it permitted them to be included as operating expenses (27 PUR3d 259).

Review of Current Cases

Expense of Purchasing Stand-by Capacity Major Issue in Electric Rate Case

A MAJOR issue in the recent Pennsylvania Power Company rate case concerned the reasonableness of the company's expense claim of $362,292 for purchasing stand-by capacity based on a contract in effect between it and its parent, Ohio Edison Company. Complainants contended that contract provisions for establishing reserve capacity transactions were derived from the erroneous concept that each company operated independently. They sought elimination of present stand-by capacity charges and the substitution of applicable charges for reserve capacity excess or deficiency based on system capacity and the relative peak demands of the two companies.

The Pennsylvania commission noted that ample evidence existed in support of the concept that the company did not operate as an independent company. There was a single dispatching center in Ohio which controlled the company's operations as a part of the system. The two companies co-ordinated their plans for adding generating and transmission facilities.

Pennsylvania Power's common stock was owned 100 per cent by Ohio Edison. The president of Ohio Edison was also president of Pennsylvania Power.

Two courses could be pursued in measuring the propriety of the claimed annual charges for stand-by capacity, the commission said. The first course was upon the basis of considering that both companies were operated as one integrated system. But such a course required also that the cost (including fixed charges) of generation and related transmission of both companies be pooled rather than a pooling solely for the purpose of determining stand-by capacity responsibilities of each company. Data necessary to reach conclusions in this regard were not of record.

The second course, the commission continued, would be for Pennsylvania Power to have installed throughout the years generating capacities as an independent and self-sustaining entity, in which event individual generating units of substantially smaller capacities would have been installed instead of the two large units actually in service.

In the absence of reliable data necessary to apply either of the yardsticks, the commission allowed the annual effect of the actual monthly payments made for stand-by capacity by Pennsylvania Power

to Ohio Edison during two months of the test year. On an annual basis, this resulted in $158,616.

Supersession Discount for Trended Original Cost

In determining a fair value rate base, the commission held that trended original cost was an acceptable measure of value, when properly derived, and that it was required to give appropriate consideration thereto. In arriving at this measure of value, the company had utilized Handy-Whitman indexes, which complainants asserted were erroneous because the factors produced fallacious estimates.

Complainants contended that the trended original cost estimate should be discounted for supersession. Supersession, as defined by the complainants, was "the phenomenon constantly taking place of the adoption of new products and new methods of construction or fabrication."

The commission noted that, although it might accept complainants' definition in the sense that it was peculiar to the trade, it disagreed with their conclusions. The statement by complainants to the effect that application of the supersession theory to plant valuation did not imply the use of substitute plant was, in the commission's opinion, erroneous.

While complainants propound an adjustment of fair value to give effect to supersession, the commission said, they readily admit it is difficult to ascribe specific amounts to various elements of plant. In fact, the application of any discount to a proper trended original cost measure of value would be in direct conflict with the very purpose of trending.

Trending Materials and Supplies and Contract Services

The company had also used the Handy-Whitman index for trending materials, supplies, and contract services, and had claimed an increase of $15,429 as a result. It claimed that such expenses were similar to items included in construction costs and, therefore, the total construction and equipment index which was used in trending plant values was appropriate to use in trending expenses.

The commission disagreed. The evidence did not indicate that the company's use of a general index, derived from average cost trends and designed to show fluctuations and property values, was wholly applicable to specific expense items, such as dollars expended for charts, meter repair parts, and tree clearing, recorded during the test period. The commission concluded that a higher price level at the end of the year for some materials, supplies, and services which were charged to operating expenses during the test year was offset by a decreased price level of other expenses and that, therefore, the actual dollars which were recorded as expenses fairly represented a current level.

Income Taxes

The company's claim for income taxes was based on depreciation deductions calculated by the straight-line method and on the accelerated amortization of emergency facilities over a five-year period. During the years 1954 and 1955, the company had elected to use accelerated depreciation based upon the declining-balance method, but on January 1, 1956, had reverted to use of the straight-line method.

Complainants took no exception to the company's use of accelerated amortization of emergency facilities for tax purposes, and averred that the accumulated taxes resulting from this method represented tax deferrals rather than a permanent tax saving. However, complainants contended that the company had erred in failing to take advantage of the declining-balance

method of depreciation as permitted by law, and claimed that such method resulted in a tax saving rather than a tax deferral. They claimed that the commission should allow only the federal income tax which would have resulted if the company had continued to take advantage of declining-balance depreciation rather than continue to use the straight-line method.

The commission refused to make an adjustment to income tax expense because of the company's continued use of straight-line depreciation for tax purposes. It pointed out that a utility had the prerogative of electing depreciation for income tax purposes by either the straight-line method or accelerated by the declining-balance method, and that it would not interfere with such prerogative.

Attrition Increment Denied

The company claimed that its composite cost of capital failed to provide a reward for good management, lag in earnings, and for possible adverse market conditions at some future time when additional financing might be required. The commission rejected the claim for attrition of earnings resulting from regulatory lag. The informed investor's knowledge of regulatory lag, the commission said, as well as normal risks of financing, are reflected in the market prices of utility securities, which evidence is considered in arriving at the allowed rate of return. Increases in labor and material expenses are matters to be dealt with separately without providing a premium in rate of return for assumed future costs.

A return of 5.9 per cent on the fair value rate base was considered reasonable. *Pennsylvania Pub. Utility Commission et al. v. Pennsylvania Power Co. C. 17195 et al. March 28, 1960.*

Equity Cost Markup to Offset Inflation Rejected As Unacceptable Current Valuation of Equity

PUGET SOUND POWER & LIGHT COMPANY has obtained authority from the Washington commission to increase rates sufficiently to afford a rate of return of 6.25 per cent on an average net investment rate base. The company had proposed higher rates which would have returned 6.32 per cent on the same valuation. Its rate of return at the time of the proceeding was found to be only 5.40 per cent and was held inadequate.

Cost of Equity Capital

The company's principal witness, in determining the cost of equity, selected a group of similar companies and computed their average earnings-price ratios for the period 1954-58. He also computed the ratios of earnings to net proceeds and to price to the public for the same period for stock offers of all "A" and "BAA" rated electrics. These ranged from 6.63 to 7.47 per cent, and the witness adopted 6.8 per cent as his final earnings-price ratio. He then adopted as a reasonable capital structure 57 per cent debt, 8 per cent preferred, and 35 per cent common equity. At this point, instead of applying the capital cost rates to the capital structure to arrive at cost of capital, the witness weighted the 35 per cent equity ratio by 1.6, which, in effect, increased it by 60 per cent, before applying the equity cost rate. The result was a figure of 6.8 per cent.

The witness explained that the markup in equity was to provide sufficient earnings to keep the market value of the com-

mon stock sufficiently above book value to offset the decline in the value of the dollar. In effect, said the commission, this signifies the use of current value rather than original cost for the common stock portion of the rate base and could not be accepted. If the markup was intended to provide for growth, the commission pointed out that growth in equity earnings arises from the reinvestment of retained earnings, and from the sale of stock at net proceeds in excess of book value, during a period of reasonable earnings. If the upward adjustment was to compensate for growth, it was again unsupportable.

The commission observed that if the 6.8 per cent earnings-price ratio developed by this witness was increased by 8 per cent for financing costs and pressure, a cost of equity of 7.4 per cent would be obtained. The latter figure is close to a 7.9 per cent cost of equity figure developed by the commission from other studies made by the same witness. Using 7.9 per cent, a cost of capital of 5.78 per cent was found. This, said the commission, provides valid evidence of the cost of capital and fair rate of return. And this cost of capital figure was substantially below the 6.25 per cent fair rate of return developed by the staff's witness.

The testimony of the staff witness demonstrated, said the commission, "rather convincingly that concurrent earnings-price ratios used with skill and judgment provide an acceptable measure of the cost of equity, the concurrent earnings-price ratios being but slightly different from ratios based on future earnings." The commission indicated that it accepts the skillful use of properly selected, carefully analyzed and checked earnings-price ratios. They reflect investors' opinion of the investment status of utility stocks relative to all other possible investment media.

This witness determined earnings-price ratios, adjusted for cost of financing and pressure, ranging from 7.45 per cent for Puget Sound itself to 8.03 per cent for a group of comparable utilities. Adding a safety factor, he arrived at a cost of equity of 8.75 per cent. He then computed a cost of capital of 6.17 per cent based on an equity ratio of 35 per cent. This figure was rounded to a 6.25 per cent fair rate of return.

The commission approved 6.25 per cent as a reasonable rate of return, pointing out that this would enable the company to maintain its credit and compete in the money markets for needed capital.

Year-end Valuation Not Warranted

Puget Sound initially asked the commission to consider reproduction new or trended original cost as a basis for determining the rate base. While it relinquished this position and accepted the net original cost basis, it urged the use of plant investment on a year-end basis. The company argued that average investment does not allow for inflation, attrition, or regulatory lag.

The commission observed that the company's load growth during past years has more than offset the effects of inflation and attrition. Moreover, the company had never before requested a general rate increase and admitted that the instant case was being processed expeditiously, so that the problem of regulatory lag did not actually arise. Average investment was therefore adopted.

Load Growth in Test Period

Instead of using the company's 1958 pro forma test year, which contained no allowance for load growth subsequent to 1958, the commission adopted the staff's suggested test year of 1960. The company had estimated 1960 operations, and the

staff restated the estimate, using the company's budget estimates which had been prepared and submitted to the commission under existing laws and regulations. Load growth was thus considered in this test period data in determining the company's revenue deficiency. *Washington Pub. Service Commission v. Puget Sound Power & Light Co. Cause No. U-9150, April 1, 1960.*

Telephone Rate Increase and Revision of Prompt Payment Discount Authorized

THE Nebraska commission authorized a small telephone company, serving about 367 urban subscribers and 167 rural subscribers, to increase rates to a level calculated to yield a return of 5.81 per cent upon a net book value rate base. The company provides common battery type service to urban subscribers and magneto type service to switching subscribers in the rural area. All the lines in the town were metallic and the telephones were all of a hand-set type. The company was authorized to eliminate rates for wall and desk type telephones for that reason.

Prompt Payment Discount

The company has a prompt payment discount plan. Until now the town subscribers were billed monthly and were entitled to a 25-cent discount if the bill was paid on or before the fifteenth of the month billed. The rural subscribers have been billed on a quarterly basis and have been entitled to 30 cents per quarter if the bill was paid on or before the fifteenth day of the second month of the quarter billed.

The company was authorized to change the amount of the discount for its town subscribers to 50 cents per month if paid on or before the tenth of the month billed, and a discount of $1.50 per quarter for its rural subscribers if paid during the first month of the current month billed.

Optional Service

The company successfully proposed an optional service offering to service station lines. A switching line user desiring common battery service and an applicant for common battery type telephone might obtain the same, provided the line is properly metallized, for an additional monthly charge of 50 cents per telephone. Then the instruments would be maintained and repaired at the applicant's expense, provided the switcher delivers the phone to the town for such repairs. The commission concluded that the proposed rates and service rules were just and reasonable and in the public interest. *Re Bassett-Springview Teleph. Co. Application No. 22119, April 13, 1960.*

Certificate Not Required for Electric Company Extension Into Territory Served by Co-operative

THE Alabama supreme court, reversing a lower court, held that Alabama Power Company was not required to obtain a certificate from the commission before constructing a transmission line to a limestone crushing plant located 4½ miles from the company's nearest distribution line.

The applicable statute provides that no transmission facilities shall be constructed "except ordinary extensions of existing systems in the usual course of

business," until a certificate is obtained. Southern Pine Electric Co-operative, Inc., won an injunction from the lower court preventing Alabama Power from operating the line, constructed during the proceeding, until it obtains a certificate.

No electrical service of any kind was being provided at the plant site at the time the suit was filed, but the co-operative maintained a one-phase line within about 1,650 feet of the plant. Apparently the co-operative was providing adequate service in the area and was ready, willing, and able to serve the plant. The 4½-mile line of the power company would cost about $18,000, and a necessary substation to serve the area would cost between $25,000 and $50,000. Anticipated annual revenue would amount to approximately $6,000.

In a brief opinion, the court indicated that the statute should not be construed as requiring a certificate for construction of this kind. It took this position "because the record shows that the Alabama Public Service Commission has never acted to require such a certificate even though utilities, including the Alabama Power Company, have in the past filed with the commission reports showing similar activities."

Dissent Cites Competitive Aspect

An extended dissenting opinion pointed out that the purpose underlying the requirement of a certificate for extensions other than ordinary extensions of an existing system in the usual course of business, is to withdraw the unrestricted right of competition between utilities rendering service of the same kind and to prevent waste incident to a duplication of facilities. It is not an ordinary extension of an existing system in the usual course of business, it was said, where, as here, the construction involves an extension into a community or territory not being served by the extending utility, and where the purpose is not simply to enable the utility to maintain good service or to provide better service for its existing system and customers. This is particularly true in this case, said the dissenting justices, since the territory is already being served by another utility. *Alabama Power Co. v. Southern Pine Electric Co-op. 118 So2d 907.*

Co-operative Fails in Territorial Invasion Complaint But Gains Utility Status and Certificate

THE Colorado supreme court sustained the state commission in holding that Union Rural Electric Association, Inc., had no standing to complain that two certificated electric utility companies were invading its service area. Since, at the time of the complaint, the co-operative was not a public utility, it had no service area to be invaded.

Only a month prior to its complaint, the co-operative had amended its articles of incorporation by deleting the provision that it should render no service to the general public and by altering its purpose to serve "members only" to read "members and customers." Claiming that it should be regarded as a public utility for the purposes of the complaint, the co-operative pointed out that it was serving anyone who wanted service and who would become a member. And membership, it was said, was almost an automatic procedure. But the commission and the court rejected this position. Membership was actually required for service by the co-operative, and the co-operative had not, in fact, held

itself out to serve the public in general at the time of the complaint.

Certificate Grant

Some time after the modification of the articles of incorporation of the co-operative, it actually held itself out to serve the public, and this fact was recognized by the commission in granting a certificate to operate as a public utility in the area around Brighton, Colorado. The court approved this grant in so far as it permitted Union to serve its then members and customers, excepting, however, those members and customers residing in incorporated towns and cities and in areas previously certificated to protesting electric public utilities. It was pointed out that the commission may well have concluded that proof of rendition of this service for a long period of time was sufficient proof of public convenience and necessity to warrant the issuance of a certificate to continue the service.

The commission had made no complete or final determination as to the rights of Union and the certificated utilities in the area to make further extensions of facilities and service. The question had been left unresolved and subject to piecemeal solution by requiring the interested parties to make application for authority to undertake specific extensions. The court agreed with the commission that no sufficient showing of public convenience and necessity had been made to warrant setting aside an exclusive service territory for Union. At the time Union acquired public utility status in 1957, the contested area was already completely served through extensions lawfully made by certificated public utilities.

The record indicated to the court, however, that the existing certificated utilities had for many years been ready, willing, and able to render adequate service to the contested area, and there was no proof that any additional service by Union was required or desirable. It was, therefore, held that the commission acted contrary to the evidence in concluding that the public convenience and necessity required Union to serve in the uncertificated and unincorporated territory.

The court declared that the utilities already certificated should be permitted to extend their lines in this territory without restrictions by the commission predicated on alleged rights of Union claimed to have been acquired prior to its gaining public utility status. As a necessary corollary, said the court, the commission has no authority to grant Union any rights of extension in the area except upon proof that adequate service is not otherwise readily available from the existing utilities and that public convenience and necessity require extensions by Union.

Removal Order Modified

The commission had directed Union to remove its facilities from incorporated towns and cities and from areas previously certificated. Union attacked the commission's authority to order its facilities removed, indicating that at least a portion of the facilities affected were an integral part of its electric system and necessary to the rendering of service to its present members and customers.

The court recognized that the commission has broad regulatory powers to designate location of facilities and also relocation or removal of them. But in exercising this power, the interests of the public must be given first and paramount consideration. The court thought the public interest would best be served by an order directing discontinuance of service by Union in the specified areas and removal of only such facilities as may deter the certificated utilities serving the areas from

rendering adequate, economical, and efficient service.

Dissent Urges "Fact" Test

Three dissenting justices would affirm the findings of the commission in this case.

They pointed out that if the "fact" test rather than the charter test were applied, then Union has for a long time operated as a public utility because it has not only set out to serve the users in the area but has aggressively sought new members and has never rejected a member. Moreover, said the dissenting justices, Union has actually served while the utility companies stood by waiting for the population to develop so as to make the operation profitable. They, therefore, thought it unfair and unrealistic to penalize Union for its prior failure to obtain recognition as a utility. *Public Service Co. of Colorado v. Colorado Pub. Utilities Commission et al. 350 P2d 543.*

Cost of Equity Measured by Earnings-market Ratio

THE Pennsylvania commission, in granting a telephone company a rate increase which would produce a return of 6.17 per cent on the depreciated original cost rate base, discussed the method of determining cost of common equity capital. The use of earnings-book value ratios as a measure of the cost of equity capital, said the commission, should be rejected. These ratios indicate the rate of return actually earned on common equity capital originally invested or accumulated in a utility, but they are not a measure of return required by investors under present conditions. Therefore, they do not represent evidence of the cost to attract common equity capital currently.

In determining a reasonable cost rate for common stock money, the commission measured cost on the basis of representative current earnings-market price ratios, which allows a return for equity capital based on the rate actually required by investors in the current market.

"Sage"

The commission held that the company had properly excluded all plant, revenues, and expenses attributable to the "Sage" operation (semiautomatic ground environment). This represented an investment in specialized nontelephone facilities for the U. S. Air Force, and could not be considered property in use for general service.

Measures of Value

The company had submitted two measures of value—original cost and a fair value computation. The commission held that the original cost determination was acceptable for the purpose of the proceedings.

With respect to the fair value computation, the company claimed that a prior commission order had allowed an amount for fair value which was approximately 10 per cent above original cost. In the present instance, the company had applied the 110 per cent ratio to its depreciated original cost claim, and had added an amount from materials and supplies, to derive its estimated fair value.

A fair value finding by the commission applies only at the specific time to which such finding is related, the company was told. The ratio of fair value to original cost obtaining at one date is inapplicable at any other time because of changes in plant, accrued depreciation, and, no less important, changes in price levels. Nevertheless, the company's proposed rates did not produce an excessive return even

when measured solely by the company's original cost rate base, the lower of the two claimed measures of value.

Pension Plan Costs

The company claimed additional operating expenses to annualize the estimated cost of a new pension plan which became effective at the end of the test year. The claimed amount was based upon a study made by a firm which specialized in such work and represented the contribution required by the company to fund the normal cost plus the accrued liability of the plan over a period of twenty years. The commission noted that the plan was patterned after that of other telephone company pension plans and provided for payments at age sixty-five on the basis of a formula tied to the years of service. The company's claim was accepted.

Storm Damage Expenses

Additional expenses were claimed to normalize, over a period of five years, hurricane and severe storm damages. Extraordinary maintenance expenses resulting from hurricanes and severe weather conditions had occurred in past years and could be expected to recur in future years, the commission noted. Although the company had suffered no such damages during the test year, it was reasonable to allow the company's claim.

Rate Case Expenses

The company claimed an annual amount of $11,000 for rate case expense. This claim was based upon the company's expenses of $55,000 in its last rate case which the commission had allowed to be amortized over a five-year period at $11,000 per year. The commission was unable to determine from the record the amount of expenses incurred in connection with the proposed rates. It appeared that the extensive studies made for the prior case were not repeated for this case, and, therefore, the commission considered the present claim excessive. The commission held that the total allowance should not exceed $10,000, and amortized that amount over five years. *Pennsylvania Pub. Utility Commission et al. v. Commonwealth Teleph. Co. C. 17211, C. 17216, February 23, 1960.*

First to File Rule Not Paramount Factor In Awarding Service Area

THE California commission, in a recent case, was faced with the question of which of two telephone companies should be allowed to serve contiguous territory which had never been served previously. One of the companies contended that it should be allowed to serve for two reasons.

One reason was that the territory in question would become a self-contained community in the future and that the company would be able to serve it as well as the complaining utility. The second reason was that the company had filed on the area before the complaining utility did.

With respect to the first contention, the commission held that the record did not show that the area in question would become a self-contained community in the foreseeable future and for that reason the contention was without merit. However, the company's other contention had to be accorded great consideration.

Normally, pointed out the commission, a utility which takes the initiative in attempting to serve previously unserved

areas should be favored. In the present case, however, it was the commission's opinion that the public interest so overwhelmingly favored service in the area in question by the complainant, that the considerations in favor of the first to file were overcome and that the complainant should be allowed to serve the area in question. *Pacific Teleph. & Teleg. Co. v. General Teleph. Co. of California, Decision No. 59746, Case No. 6301, February 29, 1960.*

State Court Entertains Actions on Gas Refund Contracts Involving Void State Minimum Price Order

THE Delaware supreme court held that actions by Cities Service Gas Company to recover from producers, pursuant to refund contracts, the difference between the filed contract price and a higher price compelled by a Kansas minimum price order, later declared void ab initio, were actions not founded upon any liability created by the Natural Gas Act, but upon private contracts deriving their force from state law. A lower state court, to which the producers sought a writ of prohibition, therefore had jurisdiction, and the high court denied the writ.

After the Phillips decision of 1954, the suppliers unilaterally filed with the Federal Power Commission the Kansas minimum price order as a part of their rate schedules and claimed that the rate prescribed in the order was the existing rate on June 7, 1954. In order to avoid state penalties pending review, Cities paid the increased price under protest, noting on its checks to the suppliers that it expected a refund of the overpayments. The checks were cashed without objection, thus creating refund contracts. In 1958 the minimum price order was invalidated by the U. S. Supreme Court.

The producers argued that Cities could not recover payments in excess of the contract price since the only lawful price for gas was fixed first by the minimum price order and later by the filing and acceptance of the order with the Federal Power Commission as a part of the producers' rate schedules. On the other hand, they urged alternatively, if the Natural Gas Act excludes the state order, then jurisdiction over Cities' claims, which, it was said, involve a liability or duty created by the act, would be vested exclusively in the federal courts by the Natural Gas Act.

Unilateral Filing a Nullity

It is settled that the Natural Gas Act, unlike the Interstate Commerce Act, does not abrogate private rate contracts as such, the court pointed out. Since Cities never agreed to the increased rate set by the minimum price order, the filing of the order by the suppliers was not an agreed change in the existing contract rate. Also, since the minimum price order was held void ab initio, the unilateral filing of it was a nullity and the contract rate was the only lawful rate.

Actions Not Based on Gas Act

The court observed that if a producer and a distributor may agree under the Natural Gas Act to fix a rate, and to change it from time to time, absent any proceeding before the commission to regulate the rate, why may they not agree that the rate to be paid shall be the contract rate if the rate imposed by a state commission is held invalid? This, it was pointed out, was what the parties here had agreed upon. Cities' claim, therefore,

did not arise from any liability created by the Natural Gas Act, but upon private contracts deriving their force from state law. There was no issue as to the reasonableness of the rate, nor any attempt to adjudicate a proper rate, as the suppliers argued.

Rejecting another contention that § 4(a) of the act creates a liability for the repayment of excessive charges, the court noted that the prescription of the statute is a standard for the commission to apply and, independently of commission action, creates no rights which courts may enforce. Also rejected was a contention that Cities should have attacked directly before the federal commission the filing of the state order as a part of the rate schedules. While the rule requiring exhaustion of administrative remedies would apply to a suit in the federal courts attacking the reasonableness of the rate, said the court, the rule would not apply in this case since no attack is made upon the filed rate, which has been held to be the gas contract rate. *Columbian Fuel Corp. et al. v. Delaware Superior Court et al. 158 A2d 478.*

Rush-hour Transit Surcharge Disapproved Along with Future Rate Schedule

THE District of Columbia commission allowed the D. C. Transit System, Inc., a substantial rate increase in the company's second rate proceeding since the issuance of its franchise in 1956. The new fare structure provides for a 25-cent cash fare, five tokens for one dollar, and a 10-cent school fare.

The first part of D. C. Transit's application proposed a rush-hour cash fare of 25 cents, a nonrush-hour cash fare of 20 cents, a token fare of 20 cents, and a school fare of 10 cents. In support of the rush-hour fare, it was urged that since operating expenses are highest during rush hours, the rush-hour riders should pay a higher fare. The commission would not go along with this reasoning, observing that while it is true that operating expenses are highest during rush hours, it is also true that the greatest number of riders use the transit facilities during the same hours. Since the company failed to demonstrate that the cost per rider is greater during rush hours, the commission could find no justification for the proposed surcharge.

Future Rate Schedule Disapproved

Under a second schedule proposed to be established a year in the future, the cash fare would be increased to 25 cents at all times.

The commission held that the company's estimates of operating results for 1961 and 1962 were too unreliable to support future rates. It regarded the twelve months ending September 30, 1959, as the latest practicable test period available to determine the actual level of earnings, and that the calendar year 1960 was an appropriate period for forecasting future operating results.

The operating and economic uncertainties of the transit industry in general, by reason of the trend of decline in passengers and increase in operating costs, are such as to render long-range prophecies of little value as a basis for fixing rates, said the commission. This is particularly true where the company is engaged in a major conversion from street railway to bus operations. For these reasons, this unique request for approval of future rates was denied.

Operating Ratio Tested

Under the 1956 Franchise Act, it was made a matter of legislative policy that the rate of return determination be shifted to a gross operating revenue basis as soon as conditions warrant. In administering this policy, the commission had required the company to show substantial progress in converting from street railway to bus operations and in adopting a firm program of gradual replacement of old buses.

Although the company had substantially met these requirements, the commission did not agree that the adequacy of earnings should be measured entirely on the basis of gross operating revenues. It required the reasonableness of the return under that method to be checked by the "rate base-rate of return" method. In any event, the commission pointed out, the theory employed in determining the amount of revenue required by a transit company is immaterial so long as the end result—the amount allowed—is adequate to meet interest requirements, pay reasonable dividends, retain a reasonable proportion of earnings in the business, provide a margin for unforeseen contingencies, and attract capital needed for future requirements.

Return Allowance

In arriving at the fair value of the company's properties, the commission averaged depreciated original cost and the substantially lower purchase price paid by D. C. Transit to its predecessor, Capital Transit. The commission calculated that a rate schedule consisting of a 25-cent cash fare, along with a 20-cent token and a 10-cent school fare, would afford a return of 4.10 per cent on gross operating revenues, or 7.14 per cent on the rate base. It considered these return figures reasonable.

A resultant return of 25 to 30 per cent on equity capital was also held reasonable in view of the company's relatively low percentage of equity capital and the risk inherent in the transit industry. The commission observed that the cost of capital method is inappropriate in determining a proper rate of return for a transit company. *Re D. C. Transit System, Inc. PUC No. 3628, Formal Case No. 471, Order No. 4631, March 31, 1960.*

Other Recent Rulings

Petition for Reconsideration. The Florida supreme court held that a petition for reconsideration and revocation of a for-hire permit, filed by persons not parties to the proceedings in which the permit was issued, could not be said to be a petition for rehearing. *Central Truck Lines, Inc. et al. v. Boyd et al. 116 So2d 770.*

Employee Protection against Merger. Even though the Interstate Commerce Commission provides for the protection of employees adversely affected by a railroad merger, an employees' collective agreement implementing the commission's order takes the place of the order in so far as the two relate to the same subject matter, and an action to enforce rights thus founded on contract cannot be maintained as an action to enforce the commission order, a federal district court held. *Arnold et al. v. Louisville & N. R. Co. 180 F Supp 429.*

Omission of Examiner's Decision. The

U. S. district court held that the Interstate Commerce Commission had not abused its discretion in omitting an examiner's recommended decision in a case where it held a carrier's schedule of lower rates unlawful, since the commission may do so in a case where it finds that due and timely execution of its functions requires the omission. *Watson Bros. Transp. Co., Inc. v. United States et al. 180 F Supp 732.*

Scope of Certificate Authority. Pointing out that a motor carrier has no authority except that granted by the commission, the Tennessee supreme court held that authority to serve "all intermediate points" could not be read into a motor carrier certificate authorizing service between a designated city and certain named points on specified routes. *W. H. Chambers Truck Line, Inc. v. Parker et al. 332 SW2d 189.*

Subscription Radio Service. The U. S. court of appeals held that the Federal Communications Commission erred in formulating a rule restricting FM licensees from furnishing advertising-free radio music on a subscription basis, except by multiplexed transmission, since broadcasting remains broadcasting even though a segment of those capable of receiving the signal are equipped to delete a portion of the signal. *Functional Music, Inc. v. Federal Communications Commission et al. 274 F2d 543.*

ICC Construction. The U. S. district court held that the ICC's interpretation of the term "municipality," as used in an act excluding the transportation of property in interstate commerce wholly within a municipality or between contiguous municipalities, as excluding New England type towns from the term "municipality" was not contrary to the intent of Congress or the National Transportation Act. *Palmer Lines, Inc. v. United States, 179 F Supp 629.*

Competitive Sprinkling Rates. The Idaho supreme court held that it would be unjustifiable to require a water company providing high-pressure domestic service to charge a relatively high rate for lawn sprinkling merely to protect another company providing low-pressure irrigation water to a few city customers for lawn sprinkling. *Re Boise Water Corp. 349 P2d 711.*

Utility Relocation Costs. The Texas supreme court held that a statute authorizing the state to pay for the relocation of utility facilities necessary for highway improvement if such relocation is eligible for participation in the federal interstate and defense highway program is not unconstitutional as establishing unreasonable classifications, constituting a release of obligation of the state, or a gift or loan of credit of the state. *Texas v. City of Austin et al. 331 SW2d 737.*

Crossing Costs. The Oregon supreme court held that a statute authorizing the commission to direct a railroad to maintain safety devices at crossings found to be dangerous and requiring the railroad to pay all costs related to the maintenance of the devices was not a violation of the railroad's constitutional rights. *Union P. R. Co. v. Hill et al. 349 P2d 1090.*

Nonoperating Revenue. The Indiana commission held that income received from investments held by a transit company is nonoperating revenue and is not to be considered as a part of operating revenue for the purpose of applying the operating ratio theory in the determina-

tion of the company's tariff. *Stettler et al. v. Indianapolis Transit System, Inc. No. 28335, January 22, 1960.*

Station Agency Discontinuance. The Indiana commission stated that whether a railroad should be permitted to dispense with a station agency in a particular community depends largely upon whether the economic waste caused by that agency's continued operation outweighs local benefit and convenience to the public. *Re New York C. R. Co. No. 28407, January 29, 1960.*

Revocation Requires Hearing. A public hearing is necessary to revoke a certificate, in the same manner required to issue a new certificate or to amend one already in effect, the Vermont supreme court pointed out. *Re Hathorn's Transp. Co., Inc. et al. 158 A2d 464.*

Gas Rate Increase. The Idaho commission granted a gas company a rate increase of 10 per cent in residential schedules and 5 per cent in industrial and institutional interruptible schedules. *Re Intermountain Gas Co. Case No. U-1034-8, Order No. 5537, February 26, 1960.*

Electric Utility versus Co-op. The Missouri commission held that a member of the public who requested service from a privately operated electric company was entitled to receive such service although he was presently receiving service from a co-operative, where both the co-operative and the company legally operated in the area and where he was dissatisfied with the co-operative service. *Diekroeger et al. v. Missouri Power & Light Co. et al. Case No. 14297, April 14, 1960.*

Electric Transmission Line Extension. The Illinois commission granted an electric company's application for permission to construct, operate, and maintain an electric transmission line extension, in order to provide facilities to meet increased demands, upon a showing that the route of the new line was the most direct and economical and had been planned so as to cause the least damage to the areas traversed and would promote the convenience of the public. *Re Central Illinois Electric & Gas Co. No. 46507, March 8, 1960.*

Conversion of Refund Contracts. The California commission denied a water company permission to convert a substantial amount of subdivider refund contracts into 3 per cent preferred stock on a dollar-for-dollar basis, in view of the company's main extension rule which provides for the termination of revenue refund contracts on the basis of their present value. *Re Campbell Water Co. Decision No. 59777, Application No. 41154, March 15, 1960.*

Gas Company Return. The Connecticut commission granted a gas company a rate increase which would produce a return of 5.2 per cent. *Re Bridgeport Gas Co. Docket No. 9882, March 25, 1960.*

Exclusion of Property Losses. The Wisconsin commission stated that it disapproved of the inclusion in the rate base of an item labeled "Unamortized Extraordinary Property Losses," representing property that was no longer used and useful by a gas company supplying natural gas in an area previously served with manufactured gas. *Re Northern States Power Co. 2-U-5335, April 1, 1960.*

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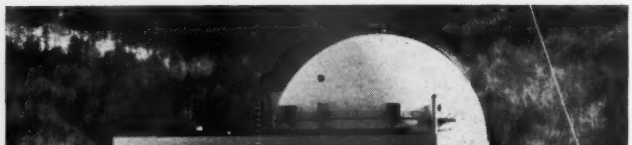

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Scheduled to be completed by July or August of this year, it will be New England's first atomic power plant. Owned by 11 New England utilities; cost $50 million; size 134,000 kw.

The electric utility industry continues to report record-breaking expansion and development of generating and distribution facilities all over the United States. Here is an impressive collection of statements by company executives describing the organization activities contributing to such spectacular growth.

FRANCIS X. WELCH, *Editor*

THE theme selected by the Edison Electric Institute for its 28th annual convention at Atlantic City, New Jersey, June 6-8, 1960, is "Leading the World in Electric Power—The American Way." It is no coincidence, therefore, that the individual reports received from electric utility executives, in response to a request from the Editor of this publication, reflect the activities which have given rise to such unparalled results.

Simply glancing through the opening paragraphs of the following collection of messages from these company leaders will give the reader the impression of a recurrent note. "Last year—1959—was a record-breaker" and "1960 will be even better." With few exceptions, the story is repeated in different ways, in terms of plant expansion, service sales, program development and added customers. In some areas, such as Florida, where the population has doubled every twenty years in the last century, the population growth factor is most spectacular. In other areas the development of new business, that is to say new kinds of business and new ways of doing business, has resulted in more kilowatt-hour sales and plant expansion. But whatever the dominant reason, the end result is the same. Bigger and better are the words constantly repeated through these individual statements.

In the light of this phenomenal testimony of industrial success, certainly the theme of the EEI meeting is a timely one. Nowhere in the world today, Soviet Russia included, has the challenge of fulfilling a public service obligation been met so successfully. Nowhere else has such a high proportion of the general population been given access to so much plentiful and reliable essential service, meeting every reasonable demand and need of every consumer or would-be consumer. This truly is the American way and it is strictly in the tradition of American industry. Every citizen of the United States can be justly proud of this splendid record of performance for the public servic

The following collection of stat ments, which are listed alphabetical according to company name, shou interest the reader for another re son—variety. It is clear that the spi of enterprise in the electric utility i dustry is most active. Here a co pany has developed an electric hea ing load along unparalled lines. The a company has licked the huge o problem of off-peak idle plant night pumping. Another company h taken a good hard look at the pro lem of systematic training of future management and is doi something about it.

Obviously no two companies a entirely alike. Operating proble and requirements are bound to va with location. But there is a comm denominator running through all these statements and it links them t gether as good examples of the sa tried and true success formula American enterprise. That is the co stant effort to improve service to t customer.

Alabama Power Company

Birmingham, Alabama

WALTER BOULDIN, *President*

ALABAMA POWER COMPANY'S 1960 construction budget contemplates an expenditure of $55.8 million as part of an estimated expenditure of $170 million within the next three years for generating plants, lines and other facilities. A large part of the 1960 expenditure—$24 million—will be used to bring to near completion two dams under construction—Weiss dam on the Coosa river and Lewis Smith dam on the Warrior river—and to start construction of the Kelly Creek dam on the Coosa river. The two dams on the Coosa river are part of a five-dam development program on that river.

Units of Weiss dam and of Lewis Smith dam will begin operation in 1961, with completion scheduled for 1962.

The Southern Electric Generating Company, owned equally by Alabama Power Company and Georgia Power Company, is completing the first two of the four 250,000-kilowatt generating units to be installed in this plant. Shakedown operation of these units is under way.

The company expects to begin this year installation of power facilities at the government's Bankhead lock and dam on the Warrior river near Tuscaloosa, Alabama. The company has under construction or scheduled for construction facilities which, exclusive of its share of the capacity of the Southern Electric Generating Company plant, will increase its generating capacity by 425,450 kilowatts. Upon completion the company's total generating capacity will be 2,593,900 kilowatts.

During 1959 new plants or expansions of existing plants in the company's service area, valued at more than $84 million, were announced. This figure includes plants only with ten or more employees and $50,000 or more capital. There were 113 such announcements. Among them were such well known companies as Marathon Southern Corporation (Division of American Can Co.), Mathieson Chemical Company, Scott Paper Company, Reichhold Chemical Corporation, Tennessee Coal and Iron Division of United States Steel Corporation, Republic Steel Corporation, Minnesota Mining & Manufacturing Company and St. Joe Paper Company.

Making a product not heretofore produced in Alabama is the Alabama Metallurgical Corporation, which late in 1959 shipped the first 16 tons of magnesium ingot from its new plant at Selma, Alabama. The history of the establishment of this plant is unusual. Several years ago while on vacation, an executive of Alabama Power Company made the acquaintance of another executive, also on vacation. In the course of the new acquaintanceship, the question was asked: "Is there any magnesium-bearing limestone in Alabama?" Thus a friendly greeting, followed by intensive cooperation, led to the establishment of a multimillion dollar industry—the first of its kind in Alabama, and one of the few in the world.

American Electric Power Company, Inc.

New York, New York

PHILIP SPORN, *President*

PROVIDED there is no materialization of a major recession, 1960 will see again see new records of performance on the American Electric Power system. Kilowatt-hour sales should increase by more than 10 per cent, to about 28.5-billion kilowatt-hours and system peak should increase by a similar percentage, to over 5300 megawatts. These forecasts have been reinforced by the performance on the AEP system thus far in 1960. The weekly system load is running 9.2 per cent ahead of the comparable period of 1959 and should increase to a greater degree when we begin to make comparisons with the period of the steel strike in 1959.

The capacity on the AEP system is expected to be fully adequate to meet this load with a reserve figure of about 20 per cent. This year 900,000 kilowatts of capacity will be added in two 450,000-kilowatt units, Unit 1 Breed plant and Unit 5 at Sporn plant. These units, when they go into service, will be the largest in the world and are also expected to be the most efficient.

A further drop in the average realization per kilowatt-hour sold, from 12.3 mills in 1959 to 12 mills, is expected this year. Despite the steady decline in realization over the past decade, earnings have continued to rise and should do so once again in 1960, with an increase of about 10 per cent. Net earnings per share, despite an increase of 900,000 shares outstanding between the beginning and end of the year, are expected to show an increase somewhat in excess of 5 per cent.

After almost a decade of very strenuous effort, substantial results are being realized in the promotion of the all-electric home. During 1959 over 5,300 electrically heated homes were added to the system, which brought the total at the year's end to close to 19,600 homes. In 1960 it is expected that 9,000 electric heating installations will be added on the system. These developments are indicative of the increasingly widening recognition of the merits of electric heating by the more progressive members of the electric utility industry and among manufacturers, builders, and mortgage lenders. The firm base thus established for the development of this load should be helpful in further broadening this

(*Continued on page* 54)

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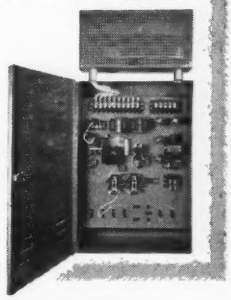

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market and should contribute substantially to further significant gains in average residential consumption. Last year, average residential use on the AEP system was 4,041 kilowatt-hours but the average electric heating customer used over five times that amount, or 20,250 kilowatt-hours.

1959 saw a considerable expansion in research and development activities on the AEP system, which will gain momentum in 1960 and the years beyond. This program holds out exciting prospects for new gains in every phase of electric utility operation.

On February 1st of this year, AEP and General Electric Company announced a joint research project to install the first gas turbine—steam turbine cycle power plant using coal for the production of electric energy. This installation will be a prototype 5,000-kilowatt turbine which will operate in a combined cycle with a 215,000-kilowatt steam turbine generator at the Muskingum river plant of the AEP system.

Work on the development of a magnetohydrodynamic generator, which was undertaken jointly by the Avco Corporation and ten electric utilities, including three AEP system companies, is being vigorously pursued, and results to date give reason for continued optimism.

At the end of March of this year, AEP announced a joint project with Westinghouse Corporation to build a test transmission line, at Apple Grove, West Virginia, to explore the technical and economic problems of extra-high-voltage transmission up to 750,000 volts. Other research is being carried out on the system to investigate switching surges, lightning stroke phenomena, and mechanical oscillations—or galloping—resulting from wind and ice conditions on extra-high-voltage transmission lines. Research that has resulted in reductions in insulation levels on transmission lines has produced considerable savings in the cost of construction of transmission facilities. This work is being pursued further in the switching surge investigation and it now appears that some very large savings can be realized.

Research in nuclear power co[n]tinues to have an important place[in] the total research program of [the] AEP system, as it has for the p[ast] several years. The AEP system co[n]tinues its participation in the Nucl[ear] Power Group, which has contribu[ted] to the research and developm[ent] associated with Dresden nuc[lear] power station. East Central Nucl[ear] Group, which is made up of 14 u[tility] ities in the Ohio Valley region incl[uding] ing three AEP system compa[nies], continuing an intensive resea[rch] gram to develop an advanced t[ype] gas-cooled nuclear power reac[tor] which it is hoped, will be built Florida by the Florida West Co[ast] Nuclear Group.

The extensive research now be[ing] carried out on the AEP system a[nd] throughout the industry offers gr[eat] promise of substantial benefits in [as]suring a continuing and abund[ant] supply of low-cost electric ener[gy] throughout the country. They p[ro]vide challenges equal in their exci[te]ment and stimulation to those fou[nd] anywhere in our economy.

Arizona Public Service Company

Phoenix, Arizona

WALTER T. LUCKING, *President*

STILL America's frontier with a future, Arizona is growing upward as measured by practically any yardstick, according to the Arizona Public Service Company's annual report. As an illustration of how the company is growing up with Arizona, the report points out that plant increased $33,186,000 or 16 per cent in 1959. Construction expenditures last year brought to $173.9 million the total amount required to meet expanding customer service needs since the consolidation of predecessor companies early in 1952. Largest single item the 1959 construction budget w[as] more than $17 million for continu[ed] work on the new Ocotillo power pl[ant] near Tempe. This 220,000-kilow[att] plant will begin operation in 1960.

Sales efforts last year helped [in]crease gas and electric general bu[si]ness revenues to a total of $61,18[0,] 000, up nearly 10 per cent over 19[59.] Total operating revenues, includi[ng] sales to other utilities and other m[is]cellaneous revenue amounted to $6[3,] 156,000. Part of the increase result[ed] from service to 12,943 new gas c[us]tomers and 8,927 new electric c[us]tomers. Gas customers and elect[ric] customers totaled more than 353,0[00] at the end of 1959. Improved stan[d]ards of living by the company's c[us]tomers also contributed to the high[er] revenues. Average annual use of el[ec]tricity in the home reached 3,664 ki[lo]watt-hours, up 102 kilowatt-hou[rs] from 1959.

Irrigation pumping, foundation [of] the state's important agricultural [in]dustry, represents the largest sin[gle] use of electricity on Arizona Pub[lic] Service's system. The pumps serv[ed] by the company irrigate appro[xi]mately one-third of Arizona's produ[c]tive farmland.

AMPLE POWER FOR INDUSTRIAL, COMMERCIAL AND AGRICULTURAL EXPANSION IN

SOUTHEASTERN COLORADO

COME TO COLORFUL COLORADO FOR BETTER BUSINESS—LIVING—PLEASURE

SOUTHERN COLORADO POWER COMPANY

115 W. 2nd STREET PUEBLO, COLORADO

Concerned by continued growth of electric irrigation load during periods of greatest demand on its electric system, the company last year introduced a trial gas irrigation pumping program to relieve this situation. Though promoted so far in only a limited area, the program appears to promise economies for both Arizona Public Service and the farmer. It has the potential of providing a better return for the company, at the same time resulting in a better seasonal balance of both gas and electric loads. The farmer benefits by paying less to operate his facilities, and much of his investment in pumping equipment also is eliminated. This program demonstrates the company's endeavor to concentrate on those service applications which benefit customers as well as promote more effective utilization of the company's investment.

Like other utility companies, Arizona Public Service has long based its operations program on forecasts for a minimum of five years. These project business growth and determine the gas and electric facilities the company will need to meet customer demands.

Today the company also is engaged in a much broader type of advance planning. It is actively studying new power sources, including new types of fuel for power plant use, as well as methods of delivering power to its markets. Much of this planning is being done on a regional basis, coordinating studies and ideas with utility firms from neighboring states.

Arkansas Power & Light Company

Little Rock, Arkansas

R. E. RITCHIE, *President*

ARKANSAS POWER & LIGHT COMPANY experienced a satisfactory year in 1959 and looks forward to the decade of the 60's with great anticipation.

Last year, AP&L spent on new construction and improvements to its electric system a total of $30.3 million, as compared with $14.1 million in 1958.

This year, the company's construction program will require expenditures of more than $35.5 million. The major share of this budget—$19 million—is earmarked for a new 325,000-kilowatt steam-electric station now under construction on the banks of the Mississippi river, near Helena, Arkansas.

When this generating facility begins producing electricity for the farms, homes, businesses and industries of Arkansas in 1961, our company will have spent almost $43 million on it.

Also, the company is presently constructing a 90-mile steel-tower transmission line, to cost upwards of $6 million, to carry the Helena plant power—at 230,000 volts—to the Middle South System's load dispatching center near Pine Bluff, Arkansas.

Arkansas is presently experiencing renewed interest in industrial expansion. This, coupled with a rich and diversified agriculture, indicate an era of prosperity for the "Land of Opportunity."

(*Continued on page* 56)

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Atlantic City Electric Company

Atlantic City, New Jersey

BAYARD L. ENGLAND, *Chairman of the Board*

THE year 1959 was the most successful in Atlantic City Electric Company's seventy-three-year history and it is anticipated that a new era for our company will take form during the early sixties.

$143 million has been budgeted by the company for new construction projects through 1965, including a generating station in the eastern section of our territory, the completion of a data processing center near Atlantic City and other general construction. This represents the largest construction program in our company's history.

During the next five years our company will reach $250 million invested in facilities to serve Southern New Jersey. This will be five times the company's plant investment in 1947.

The present trend of growth, development and improvement in Southern New Jersey should accelerate during the early sixties. This forecast is based on a compilation of public, industrial, commercial and residential projects definitely be constructed or planned in the ei county area we serve.

We spent $13.8 million last y for new and improved facilities are planning to spend an average $24 million a year for the next f years. Of this $13.8 million, $4 m lion was spent on generating facilit Construction of transmission, dis bution and general facilities requi nearly $9.8 million. This includ part of the cost of a new 138,0 volt tower line in Gloucester cou connecting the Atlantic City El tric system with the Pennsylvan New Jersey-Maryland Interconn tion. This tie-line will be in ope tion about July.

The company's new data proce ing center, which houses the n RCA-501 transistorized data proce ing equipment and the general counting and centralized billing fu tions of the company was put i operation in April of this year.

Later this year construction w be in full swing at the propos Beesley's Point generating stati the first power plant to be built the eastern section of our territo since 1911 and is scheduled for oper tion late in 1962. It will be locat in Cape May county and the fi generating unit installed at this n plant will have a capability 136,000 kilowatts. It will be a se outdoor power plant with boilers a generators located outdoors and t bines housed in the main building.

Sixty-eight new industries and e pansion of present industries w added to our company's lines l year and we anticipate an ev greater number in the years ahea A total of 5,600 new customers w added to our lines, bringing the to number of customers to 227,000.

We have been pioneers in the pr motion of electric heating and we w continue to sponsor and promote t total electric home. We are for casting that by 1965 there will 6,000 electrically heated homes in t area we serve.

In our business, like most othe in Southern New Jersey, we feel o opportunities lie in growth. Wi this growth comes an ever increasi expansion of our local economy. O area expansion has been phenomen in the past and it will be far mo phenomenal in the next five years.

A Growing Public Utility

California-Pacific Utilities Company operates electric, gas, water and telephone services. Its territory includes 83 communities in California, Oregon, Nevada, Idaho, Wyoming, Utah and Arizona. Since 1950, the population of these seven states has been growing more than twice as fast as the United States as a whole, according to Census Bureau estimates.

Between 1949 and 1959, number of customers increased from 38,978 to 69,787; total revenues from $4,839,854 to $11,340,112; and net income from $377,027 to $1,064,564; representing increases of 79 per cent in customers, 134 per cent in revenues, and 182 per cent in earnings.

California-Pacific Utilities Company

405 MONTGOMERY STREET • SAN FRANCISCO 4, CALIFORNIA

Baltimore Gas and Electric Company

Baltimore, Maryland

J. THEODORE WOLFE, *President*

LOSING out the decade of the 1950's with the best year in its history, the Baltimore Gas and Electric Company serves the economically well-balanced and rapidly expanding Baltimore metropolitan area and surrounding territory—a total of 2,283 square miles with a present population of 1,850,000.

During the past ten years, plant investment, revenues and net income have more than doubled. In 1959 capital expenditures for new facilities amounted to $38 million. The 1960 program calls for expenditures of $50 million, about 80 per cent of which is earmarked for electric generation, transmission and distribution facilities and 15 per cent for gas distribution facilities with the balance for property used jointly by the electric and gas divisions. For the five years through 1964, more than a quarter billion dollars is expected to be invested in expansion.

For some time we have been adding steam-electric generating units of increasing sizes at the average rate of about one every two years. Construction work is well advanced on our new 191,000-kilowatt unit scheduled for initial operation in 1961 at the new Charles P. Crane station on the Chesapeake bay to the east of Baltimore. A second similar unit has been ordered to be ready for service in 1963.

To meet growing demands and increasing average load per customer on the most economical and satisfactory basis, we have instituted and are pursuing a program of changing our 4 kilovolt distribution system to 13 kilovolts outside of Baltimore city.

The acquisition of new industrial and commercial business—both electric and gas—continues at high levels. The amount contracted for in the early part of 1960 is expected to produce annual revenues substantially in excess of those resulting from similar new loads acquired in the same period of last year.

With its excellent port facilities, its high degree of economic diversification, and its nearness to the Nation's Capital as well as to other major markets, the Baltimore area continues to enjoy sustained industrial growth. Also, with a rate of population growth well above the national average, a continuation of the steady increase in the number of our residential customers is indicated.

Black Hills Power and Light Company

Rapid City, South Dakota

NEIL G. SIMPSON, *President*

BLACK HILLS POWER AND LIGHT COMPANY is presently constructing a 22,000-kilowatt steam turbo-generator unit near Rapid City, South Dakota. To be known as the Ben French station, this unit is expected to go into production late in 1960. It will increase our system's nameplate capacity to 111,725 kilowatts, which will be about two and one-half times our total nameplate capacity in 1950. Our total construction budget during 1960 is about $5.1 million, which includes $3.5 million for the completion of the Ben French station.

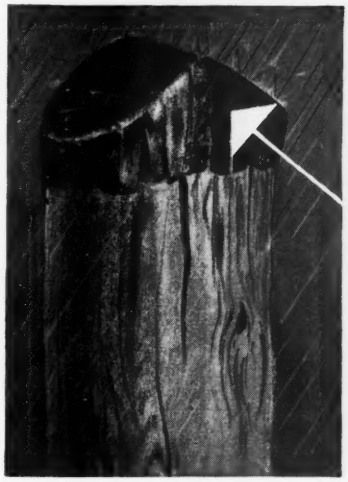
Increased impetus will be given to our sales and load building efforts. Advertising and promotion will stress the Medallion home to provide greater acceptance by builders and customers. We expect increased loads from summer air conditioning, and can foresee a substantial sales potential in electric heating.

Our well diversified service area is showing more rapid population growth than the nation as a whole. Our people are vigorous and friendly, our natural resources bountiful. The scenery is magnificent and the area's history is colorful. Last year two and three-quarter million people visited the Black Hills, spending an estimated $80 million. The number grows year by year. Rapid City, the state's second largest city, led all cities in South Dakota in both number and value of construction projects. Substantial additions were made to the cement industry and to the oil production and refining industry. Pulp wood shipments from the Black Hills to Wisconsin paper mills were made in quantity for the first time. The award of contracts for the construction of an intercontinental missile base, at a cost of around $50 million, guarantees the Black Hills' position as an important military defense area. Our relative isolation is becoming less of a problem with the development of modern highways and fast airline service to large metropolitan areas. These are just a few of the items indicating a future of growth and prosperity.

(*Continued on page* 58)

THOUSANDS OF POLES

KEEP THEIR AGES A SECRET



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Fungus decay, plus shrinking-swelling, freezing-thawing of moisture, can wreak havoc with your pole tops. And the damage can quickly extend right down to the crossarm area to cause expensive replacement of the whole pole. Why invite trouble? Take positive action now for long-lasting pole top protection.

The OSMOSE Pole Topper is a reinforced cap of bituminous compound with 5% penta . . . the only item of its kind on the market today. *Costs only $1.25 each!* Results indicate it will add up to 20 years of extra "top life". Comes as a simple do-it-yourself unit. Lightweight, easy to carry and clean to handle. Can be applied in only one minute. Fits snug and will not crack or peel. For use on new and salvage poles in the yard, as well as standing poles.

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SERVING UTILITIES SINCE 1935

California-Pacific Utilities Company

San Francisco, California

E. K. ALBERT, *President*

THE growth of the West continues at the remarkable rate that has been widely reported during the years past. It is well known that the growth of business has caused the phenomenal increases in construction of new plant facilities for commercial and industrial establishments as well as public utilities. Employment has increased enormously and population growth continues at a rate higher than most other parts of the country. Recent population growth statistics for ten western states inform us that nearly 2,200 people daily are being added to the population of that area. It is estimated that this daily increase in new residents will result in the daily establishment of over 600 new homes in the ten western states. These figures tell us why we have had the remarkable growth in business, industrial activities and the prodigious growth of electric utility facilities.

The service areas of our company's electric properties are located in the rural areas of seven western states. Even though the growth of our business has not been as great as the remarkable rate of growth of utility service in the service areas of companies serving the cities and adjacent urban areas, it has been substantial, as may be shown by the following comparison for the last five years:

	1954	*1959*	*5 Year Increase*
Electric Customers Served	29,166	35,438	22.6%
Kilowatt-hour Sales	227,836,586	344,193,961	51.0%
Average Annual Kilowatt-hour per Domestic Customer	4,952	6,386	29.0%

The growth of our busines[s] dur[ing] the past five years has kept engine[ers] ing and operating personnel q[uite] busy with the increase of s[er]vice quirements, as well as [pro]vid[ing] supervision of construction of [new] distribution facilities. Th[is] growth is likely to continue is f[ur]ther indicated by an incr[ease] more than 8 per cent in kilowatt-h[our] sales during 1959. Domestic c[us]tomers have also increased their [an]nual average use of electricity by [ap]proximately 300 kilowatt-hours d[ur]ing the past year. This, of course, [re]quires the continuation of an exte[n]sive construction program design[ed] to build system capacity ahead of [the] remarkable increase in demands [for] more electricity in all parts of [our] western states. As a result, our 19[60] construction budget for our elect[ric] properties of nearly $2.5 million h[as] increased 150 per cent over [the] budget requirements of five ye[ars] ago. Reports from the field indic[ate] this trend will continue.

Special attention is also called [to] an extensive transmission line co[n]struction project which is a part [of] our 1960 construction budget. T[he] new facility will provide an additio[n] 10,000 kilowatts of capacity for [the] Southern Utah division. Future co[n]struction of an additional 138 kilov[olt] line, already planned, will prov[ide] ultimate delivery capacity of m[ore] than 60,000 kilowatts. The proj[ect] involves the construction of 92 mi[les] of 138-kilovolt transmission line [to] interconnect our Southern Utah s[ys]tem with the systems of the Tellur[ide] Power Co. and the Utah Power [&] Light Co. Our company will build [the] miles of this transmission line fr[om] Cedar City, Utah to the northe[rn] boundary of our service area at t[he] Iron county line, and Telluride Pow[er] Co. will construct the remaining [92] miles of line from this point throu[gh] their service area to Sevier, Ut[ah].

This new transmission line proj[ect] is also a part of the overall plan [of] the investor-owned utilities of t[he] five western states of Utah, Arizo[na] Wyoming, Colorado and New Mex[ico] to build a five-state power pool t[hat] will integrate the utility transmissi[on] systems in the five Rocky Mounta[in] states area with that of the U. [S.] Bureau of Reclamation. This pl[an] will thereby eventually provide f[or] the transmission of electricity fr[om]

Electric Utilities

For our current list of electric utility stocks considered interesting for growth prospects, write or call —

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Glen Canyon project and other generating facilities of the Bureau's Colorado River Storage Project to various areas where the additional power is required to meet the growth of the West.

Further studies of our 1960 construction budget indicate that approximately 90 per cent of this budget will be spent on addition of new line extensions, transformers, meters, services, and the rebuilding of numerous sections of existing distribution system to take care of increased number of customers and the continually increasing electric loads. Forecasts from all of the company's service areas point toward the continuation of a healthy rate of growth of our electric business during the year. Numerous housing projects are planned and already under way. Commitments have been made for the delivery of power service to an increasing number of irrigation projects in our rural service areas. Lumber industries on our various Northern California and Eastern Oregon electric properties expect a continuation of their heavy operations during the year 1959. We therefore look forward to another year of substantial growth of the company's business.

Carolina Power & Light Company

Raleigh, North Carolina

L. V. SUTTON, *President and Chairman of the Board*

THE next half-century belongs to the South, according to an apt promotional slogan. A substantial share of that bright future belongs to the two million or more Carolinians who live in the service area of Carolina Power & Light Company.

An influx of new industry not only has brought better balance to an economy once largely dependent upon agriculture; but the diversity of this new industry has significantly raised the per capita income of the region.

Improved earnings have stimulated spending for more comfortable homes, better cars, more efficient equipment on the farm and in the shop—along with a more widespread demand for creature comforts only recently regarded as luxuries. The effect of these improvements in the living standards of the Carolinas has been reflected directly in the use of electricity: For the 12 months ended March 31st, residential consumption averaged 5,144 kilowatt-hours (or 41 per cent above the national average).

Consumer acceptance has been encouraged by excellent dealer co-operation with sales promotion efforts, including builder support of Medallion Home standards and a persistent campaign for all-electric heating and cooling.

The new generating capacity being built to meet these demands is taking three forms—hydro-electric, steam-electric and atomic-electric. The last-named is an experimental prototype plant being constructed at Parr, South Carolina, in co-operation with three neighbor utilities. Scheduled to go critical in mid-1962, the Parr plant will provide operational experience for our personnel and point the way toward larger nuclear plants for the four participating companies.

Completion of construction now in progress will push our postwar expansion beyond the $300 million mark. A new 250,000-horsepower steam-electric plant was due to go on the line in Darlington county, S. C., in May. A 2,550-acre cooling lake was created at this site. The work of adding a fourth generator, of 30,000-horsepower capacity, at the Tillery hydroelectric generating plant should be completed early in 1961. Ground was broken in May for a 320,000-horsepower addition at Goldsboro steam-electric generating plant. This project, including a 550-acre cooling lake, is scheduled for 1962 operation.

Where increased operating efficiency is clearly indicated, new technology is being applied. An "electronic brain" now automatically loads our five major generating plants, and newer units are embracing the latest in automatic controls.

A continuing, co-ordinated program of public relations recently has stressed the "value of service" theme adopted by the EEI Public Relations Committee. Also, for the first time in our history, we held regional stockholders meetings at which management not only presented firsthand reports but answered individual questions.

One interconnection was added and another entirely rebuilt last year, and three projects now under way will strengthen inter-company ties with neighboring Duke Power, Appalachian Power, and Virginia Electric and Power Companies.

Our kilowatt-hour output was up 14 per cent for the year 1959. As of last March 31st, annual revenues had increased 9 per cent (to reach $78 million) and net income had increased 11 per cent over the previous 12 months. At the same time, the average price for residential and rural service held at less than two cents per kilowatt-hour, or 24 per cent below the national average.

For the fifteen years from 1944 through 1959, Carolina Power & Light Company has increased its

(*Continued on page* 60)

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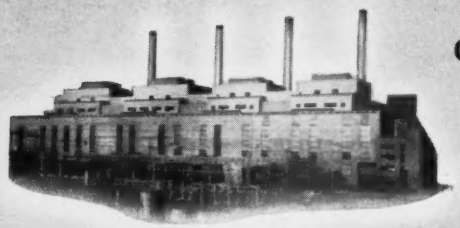
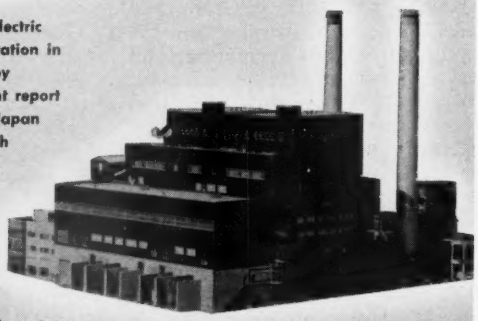


CHIBA STATION
9224 BTU/KWH
(Tokyo Electric Power Co., Inc.)

Of the six most efficient electric generating plants now in operation in Japan, four were designed by Gilbert Associates, Inc. A recent report of plant performance by the Japan Electric Association shows each of these stations as having an average annual net heat rate below 9800 BTU/KWH.

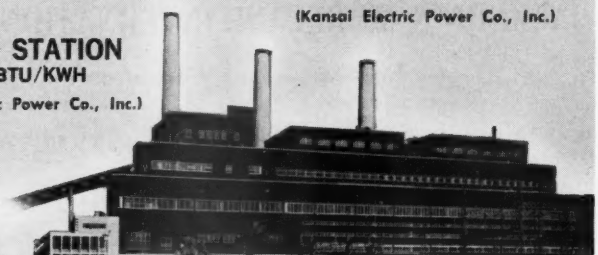
Gilbert is pleased to be associated with the operating and manufacturing companies who participated in the establishment of this commendable record.



TANAGAWA STATION
9560 BTU/KWH
(Kansai Electric Power Co., Inc.)

OSAKA STATION
9614 BTU/KWH
(Kansai Electric Power Co., Inc.)

KARITA STATION
9779 BTU/KWH
(Kyushu Electric Power Co., Inc.)



A SYMBOL OF GAI PROGRESS

GILBERT ASSOCIATES, INC.
ENGINEERS AND CONSULTANTS
READING, PENNSYLVANIA, U. S. A.

gross revenues more than four tim its net income more than five an half times and total plant investm four times.

The Carolinas — always bless with an inviting climate—are beco ing increasingly conscious of t other favorable "climates." The fi is the governmental climate, or poli cal attitude toward industry dem strated by the current administrati of both North Carolina and Sou Carolina. It has stimulated decisio to settle new or expanded plants an area which affords the usual a vantages sought by industrial pr pectors, plus "elbow room" and warm welcome on the part of pub officials at all administrative leve

The other "climate" is a technolo cal environment highly conducive research and development. The scie tist finds in both the Carolinas open-armed welcome to the facilit of colleges and universities interest in contributing to the material a vancement of mankind as well as e tending his intellectual horizons.

An area within ready reach of t University of North Carolina, Nor Carolina State College and Duke U versity already has become inte nationally-known as the "Resear Triangle." In casting around f technical advice on its atomic pow project, the Carolinas Virgin Nuclear Power Associates found th the very first tenant of that park Astra, Inc., — possessed just t know-how needed for the fi nuclear-fired electric power plant the Southeast.

Research and development are r peatedly stressed by industrial pro pects who call upon our Area D velopment Department for couns Working closely with local and sta agencies, this segment of our co pany brought a record-breaking per cent increase in new or expand plants locating within our servi area during the year. The announc figures were $75 million in new i vestment, creating 13,000 new jo and boasting payrolls of $40 milli per year.

The Area Development Depar ment also concentrates on agricu tural and community develop mer

Better home life, increased indu try and improved agriculture all ac up to growing power requirem which Carolina Power & Light Co pany is preparing to supply. F fifty-two years that supply has nev been too little nor too late. Our pla for the future are calculated to mai tain that record.

(Continued on page 62)

3 UNDER 9400

SILAS C. McMEEKIN STATION
9093 BTU/KWH *
(South Carolina Electric & Gas Co.)

SHAWVILLE STATION
9163 BTU/KWH
(Pennsylvania Electric Co.)

MILLIKEN STATION
9378 BTU/KWH
(New York State Electric & Gas Corp.)

Gilbert Associates, Inc., is proud to have contributed to the creation of many outstanding power generating facilities throughout this country and the rest of the world. We are particularly pleased with the fact that the Federal Power Commission's latest report (S-137) shows three of these Gilbert designed stations among the U. S. generating plants whose Average Annual Net Station Heat Rate is under 9400 BTU/KWH.

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GILBERT ASSOCIATES, INC.
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READING, PENNSYLVANIA

HERE'S HOW YOU CAN GET MORE DITCH PER DOLLAR!

Photos above show the versatile Vermeer 4T POW-R-DITCHER digging a gas main trench. Manufactured for the light construction field, this small, inexpensive ditcher is excellent for water and cable lines and home foundation footings.

RUGGED, LOW COST 4T

POW-R-DITCHER

DIGS 6"-14" WIDE DOWN TO 4½' DEEP

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IDEAL FOR LAYING GAS PIPE, WATER AND CABLE LINES AND FOR HOME FOUNDATION FOOTINGS

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Central Hudson Gas & Electric Corporation

Poughkeepsie, New York

ERNEST R. ACKER, *President*

WITH the completion last fall of a 140,000 kilowatt addition to the company's Danskammer Point steam station, Central Hudson is in a position to provide all of its electric capacity requirements from its own system and have sufficient excess capacity for its estimated load growth and reserve requirements through 1962. In the past ten years the company has completed the transition from a purchaser of the bulk of its electric power requirements to self-sufficiency in power generation; in 1949 power purchased from outside sources represented 90 per cent of the company's total output for its regular customers.

The decade of the fifties was a period of progress and rapid growth in the company's operations. Electric sales increased 150 per cent and electric revenues 144 per cent. To keep pace with the growing demand for electric service, the company expanded its electric plant 242 per cent and undertook a record financing program. In the period 1950 through 1958 the electric sales to ultimate customers in the Central Hudson area showed an average annual compounded growth of 9 per cent, while in the Middle Atlantic states the corresponding rate of growth of the investor-owned utilities as a group was 6 per cent.

The implementation of the company's residential sales program is being aided by the adoption of a new electronic method for recording currently information concerning appliance saturation and customer needs. With this information processed on our IBM equipment, we are able to direct the efforts of our sales personnel and programs more effectively and assure a greater use of our services in the home.

An important development affecting the future operations of the company was the recent organization of Empire State Utilities Power Resources Associates (ESUPRA) by the seven principal electric utilities of the state to study, on a co-ordinated basis, all aspects of power generation and transmission to meet the future power requirements of the state at the lowest possible cost. The studies which are currently being made cover not only size and location of future generating and transmission facilities, together with pooling arrangements for their most effective use, but also the place of nuclear energy in the future power resources of the state.

Central Louisiana Electric Company, Inc.

Alexandria, Louisiana

T. M. HAUER, *Vice President*

WITH the close of the year 1959, Central Louisiana Electric Company, Inc. completed its twenty-fifth year of operations following organization as of January 1, 1935. The company's annual report for 1959 features the twenty-fifth anniversary year in text and pictures showing an increase in operating revenue from $188,000 in 1934 to $19,720,000 in 1959. During the same period, total assets increased from $1,531,000 to $103,264,000 and customers increased from 3,143 to 156,600.

The company's first generating units were installed in 1938 and consisted of three 1,000-kilowatt gas engine driven generators. This installation carried the entire system load at the time. The capability of present generating stations aggregates 200,000 kilowatts. A 116,000-kilowatt generating unit is now under construction which is scheduled for completion early in 1961 and a second such unit is scheduled for 1966.

The five-year construction budget of the company aggregates $54 million of which $13 million is scheduled for 1960.

The company looks forward with confidence to a continuation of the growth and development of the state of Louisiana and the company's service area.

We are looking for diesel engine generating sets, later styles, size 50 to 1500 KVA for export purposes. We will buy complete power plants if the price is right. Send us your inquiries for power transformers, outdoor switching equipment, substation items, also anything you wish to dispose of for cash or for trade.

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Minneapolis 23, Minn.
Union 9-2434

Central and South West Corporation

Wilmington, Delaware

GAIL BELDEN, *Vice President*

CONTINUED growth is anticipated during 1960 for the 150,000 square mile service area of the Central and South West System—particularly in the larger urban centers. Industrial development continues throughout the territory, with sizable plant expansions programmed, including those of Texas Eastman Corporation, Dewey Cement Co., Carbide & Carbon Chemical Co., Celanese Corporation and Aluminum Company of America.

During the first five months this year, two new generating units were installed—one unit in Shreveport having a generating capability of 34,000 kilowatts, and a second unit near Mission, Texas, with a generating capability of 110,000 kilowatts. This latter unit adds approximately 75 per cent to the generating capability in the Rio Grande Valley—an area which for the past several years has been growing at a faster rate than the system.

Construction in 1960 is expected to cost an estimated $62 million, and will include expenditure on a new 170,000-kilowatt unit, located twenty-five miles northeast of Tulsa, scheduled for completion in 1961.

Each of the system companies has instituted special winter heating rates, designed to stimulate the use of electricity during the off-peak months of the year, and so improve the load factor.

At the close of last year, the system had in excess of 2,100 central unit heat pumps connected to its lines—more than 400 Gold Medallion homes—and in excess of 2,400 Bronze Medallion homes. It is anticipated that substantial additions will be made to these totals in 1960.

The operating companies have been successful in obtaining fuel clauses in residential and commercial rate schedules, which heretofore were not protected. It is anticipated that full coverage will be obtained on the remainder of these schedules during the current year.

The Cincinnati Gas & Electric Company

Cincinnati, Ohio

WILLIAM H. ZIMMER, *Executive Vice President*

A $92 million construction program for 1960 and 1961 and successful conclusion of several applications for gas and electric rate increases highlight CG&E's outlook.

The company will spend $45 million in 1960 and $47 million in 1961 to keep pace with the constantly increasing demands for gas and electricity in its service area.

Main items in the construction program are two new electric generating units and related transmission facilities. A new 165,000-kilowatt unit at the company's Miami Fort station is scheduled for operation late in 1960. Contracts for most of the equipment and construction work have been made for a new 225,000-kilowatt unit at the Walter C. Beckjord station. This unit is scheduled for completion in the fall of 1962. Another 165,000-kilowatt unit was placed in operation at the station in July, 1958.

One of the long term problems of the company continues to be the effects on operating expenses and plant investment per customer. Despite all efforts to reduce expenses and operate in the most economical manner possible, cost of gas and electric services continues to rise.

The company follows a policy of constantly studying its rate situation in all areas served and of seeking rate adjustments where necessary and justified. Only by maintaining earnings at an adequate level will it be able to obtain the funds for plant construction necessary to best serve the needs of the community and continue the high quality of service to which its customers are accustomed.

A $684,000 annual increase in gas revenues has been granted to The Union Light, Heat and Power Company, the company's Kentucky subsidiary, by the Kentucky Commission. That company also is collecting a $969,000 annual increase in electric revenues, subject to refund to the extent not finally allowed in a pending rate case. A decision on this is expected in the near future.

The company, during 1959, negotiated a new gas rate ordinance in the city of Cincinnati which provides for an annual increase of $250,000. The electric rate ordinance in Cincinnati expires June 30, 1960. Negotiations are in progress for a new ordinance.

In an order dated April 15, 1960, the Public Utilities Commission of Ohio authorized a rate increase in non-ordinance electric rates in areas outside Cincinnati, Norwood and St. Bernard. The increase will produce slightly over $1.5 million per year additional revenue. The company also has announced a program for the renegotiation of higher electric rates in municipalities served outside of Cincinnati, Norwood and St. Bernard.

(*Continued on page* 64)

The Future Is Bright!

Yes, "bright" is the word to describe the outlook in Otter Tail Power Company's service territory in Minnesota and the two Dakotas.

More people than ever are working on projects ranging from community betterment to industrial development. And, significantly, a trend for light processing industry to locate and expand in the area is gaining widespread momentum. The prospects are for greater diversification and better business conditions.

A growing confidence in the potential of the region is good reason for optimism. No doubt about it —the future is *bright* in the Upper Midwest!

Otter Tail
POWER COMPANY

SERVING NEARLY 500 UPPER MIDWEST COMMUNITIES

The Cleveland Electric Illuminating Company

Cleveland, Ohio

ELMER L. LINDSETH, *Chairman of the Board*

REPEATED studies have shown that the most reasonable rates and the best service are usually provided by utilities with good earnings. And an effective aid to good earnings is the kind of rate regulation which permits an adequate rate of return on a rate base related to today's construction costs.

Adequate utility profits protect the long-range interests of the public. They make possible the costly programs of modernization and mechanization which, by increasing efficiency, help to counteract rising costs and thus relieve the pressure toward higher rates. So in the final analysis, healthy profits are more important to the customer than to the share owner or employee. Recognition of this fact is growing. Recent decisions involving utility rates show a trend toward evaluating assets in terms of toda dollar, and setting rates of ret somewhat closer to those of unre lated industries.

An intensive program of educat by the industry, aimed at both leg lators and the general public, could much to accelerate this trend. T result would be a significant streng ening of America's utilities and of nation's whole economy.

Commonwealth Edison Company

Chicago, Illinois

WILLIS GALE, *Chairman*

COMMONWEALTH Edison Company plans a record expenditure for construction in the four-year period 1960 through 1963. In his annual report to stockholders, Willis Gale, chairman, reports that construction expenditures for this period are estimated to reach a total of $700 million. The program calls for expenditures of $160 million in 1960; $165 million in 1961; $175 million in 1962; and $200 million in 1963.

Construction expenditures in 1959 amounted to $100,994,936. Two new generating units were placed in service, one at Fisk station and the other at Joliet. The two units increased net generating capability from 4,396,000 kilowatts to 5,031,000.

New generating units now on order or under construction total 1,605,000 kilowatts of estimated net capability, as follows: 180,000-kilowatt nuclear unit at Dresden for service in 1960; 305,000 kilowatts at Crawford station for 1961; 305,000 kilowatts each at Waukegan and State Line statio for 1962; and 510,000 kilowatts Will county station for 1963. Af retirement of 150,000 kilowatts of generating equipment, it is estimat that net generating capability will 6,486,000 kilowatts by the end 1963.

In 1959 the company installed electronic computer-controller dev called the automatic dispatch sy tem. It is designed to insure that an instantaneous basis the m efficient use is made of the compan many electric generating units. The units have a wide range of efficienc depending on their age and other fa tors.

The new computer-controller mea ures the moment-to-moment total u of electricity by customers and dete mines the combination of generat loadings which can most economica meet this constantly changing dema and, by remote control, continual adjusts loads on individual generator

Construction of the Dresden n clear power station was complete last fall and initial fissioning w achieved on October 15th after abo 6 per cent of the plant's uranium fu elements were placed in the reacto core. Since then, it has been unde going an extensive program of n clear measurements and tests. T usual mechanical problems that a peared in early testing have, the com pany believes, been solved.

Dresden has been the company most dramatic construction projec It will be equally dramatic when full operation—now scheduled fo this summer—several months ahea of the original contract date of D cember 7, 1960.

While Dresden does not mean tha competitive nuclear power is here, is an important step toward that en

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The Connecticut Light and Power Company

Berlin, Connecticut

SHERMAN R. KNAPP, *President*

For the past several months, "The Challenge of the Sixties" has been a topic of major concern in the utility industry's trade journals and at its conventions. While the specific nature of the challenge varies with the viewpoint of the author or the speaker, it is evident that we are entering a critical decade. It is evident also that the industry faces not one challenge, but a multitude of them.

Varied and complex as the problems confronting us are, there is a denominator that is common to their solution. More than ever before, there is a need at all levels for management people, skilled in the science of managing. In addition to a comprehensive knowledge of his own job and an over-all familiarity with his company and the industry, today's manager must be skilled in the arts of public relations and community relations and employee relations. He must be a salesman, able to persuade a group of skeptical business associates or to win over the members of the local civic association. In face of rising costs, he must be a hardheaded realist with enough accounting acumen to relate business goals to the dollars involved in achieving them. Whatever his function may be, he must be enough of "an operating man" to evaluate his efforts in terms of their contribution to the company's basic goal of rendering the best possible service at the lowest possible price. He must be a forecaster, a planner, an organizer, a controller, a communicator and a delegator. In short, he must be a leader.

Good leaders don't just happen. If we are to measure up effectively to the challenge of the sixties—and of the seventies and eighties for that matter—means must be found of recognizing managerial talent and assisting in its growth. This is not an easy task. We can predict with scientific precision the performance of machines and equipment—we have only the crudest methods of forecasting the performance of an individual. We account meticulously for our physical and financial assets—our inventories of human assets, where they exist at all, are too frequently based on the flimsiest of appraisals in which we ourselves do not wholly believe.

There is ample factual evidence that the job needs doing. Our collective corporate image, as viewed from the engineering schools of the country—a natural recruitment source of future executives—is scarcely a flattering one. Our promotions into the management group and within the management group are, according to one recent survey, primarily influenced by seniority. Traditionally, we have taken pride in our practice of promotion from within. This policy is good so long as initial hiring and promotional policies are sound. If they are not sound, we may be inbreeding the inept and advancing the incompetent.

In an era which has been characterized by rapid advances in the technology of management, a few utilities are doing an outstanding job in assisting their people in the acquisition and development of management skills—far too many are doing little or nothing at all.

Lawrence A. Appley, president of the American Management Association, has said that the primary mission of management is not the direction of things, but the development of people. This concept is easy to subscribe to in principle. When we begin to act as if we believe it, we will be taking a long step toward the full performance of our own jobs and the successful mastery of the challenges that lie ahead.

Consolidated Edison Company of New York, Inc.

New York, New York

CHARLES E. EBLE, *President*

Con Edison this year is continuing a construction and improvement program which requires expenditures at the rate of $200 million a year through 1964. In the five-year period 1960-64 the company will spend a total of $1.2 billion.

In 1959 Con Edison spent $222 million on new construction and expansion. In 1960 the budget calls for $225 million.

During the course of the Public Service Commission's broad investigation of Con Edison's electric rates ordered in June 1959, the company

(*Continued on page 66*)

TAX EXEMPT INCOME

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What's more—you can *get* this income. The availability of tax-free income has never been greater than in today's big market for tax-exempt bonds. In these bonds, long recognized for their security and strength, you will find real opportunities for take-home income.

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AND OTHER PRINCIPAL CITIES

has sought rate increases. The commission granted the company interim relief early this year which will increase revenues from electricity by about $14 million annually. While the investigation continues, Con Edison steadily has emphasized the need for further electric rate increases. Simply put, Con Edison's case is one of imperative need. A profit level sufficient to attract and keep investors must be maintained. If earnings continue at an inadequate level, Con Edison will be unable to raise the capital required to fulfill its obligations toward construction and improvement. The early decision on the interim relief has been encouraging, but the investigation before the Public Service Commission is continuing and final judgments have not been made.

A significant aspect of Con Edison's operations in 1959 was the purchase of New York city's three subway power plants last August 1st. Total kilowatt sales reflected not only a sizable increase specifically related to the sale of energy to the city for subway operations, but also a healthy growth factor in the general New York community.

At the end of 1959, the generating capacity of Con Edison's system was 4.9 million kilowatts. It had been boosted during the year by 335,000 kilowatts when Arthur Kill No. 2 on Staten Island came on the line and by the three subway power plants with a combined capacity at the end of 1959 of 478,000 kilowatts. In the areas of transmission and distribution, six major substations were put in service last year. Extensive reinforcements and additions were made to the systems and two 138,000-volt tie lines were completed to interconnect three generating stations.

Naturally there are a good many projects begun some time ago which are being continued today, but will not be completed this year. These projects engage many of our efforts and much of our time. Our most highly-publicized project of this nature is the Indian Point station—a nuclear facility 20 miles up the Hudson from New York. Indian Point is scheduled to go into operation in 1961. It will generate 275,000 kilowatts and will admit its power into Con Edison's general transmission system.

At Astoria, two projects are underway. A 357,000-kilowatt turbine-generator will be ready to go on the line in 1961. Installation work began two years ago. A second unit is scheduled for service in 1962. They will have identical capacities.

At a new generating station, two 357,000-kilowatt units are to be installed; one to go into operation in 1963 and the other to follow a year later.

1959 made it clear that Con Edison is now a summer peak system. The tremendous growth of summer air conditioning has been responsible for boosting that seasonal peak above the annual peak which traditionally ha come in the winter. Now that a sum mer peak load is firmly establishe construction on the electric syste must provide for rapid growth du ing that season.

Con Edison's promotional effor were unusually successful in 195 Residential gas customers rose by 1 per cent and the total number of ne installations for residential, co mme cial and industrial purposes w s 18 000 during 1959. One and two-fami homebuilders have chosen g s fo home heating in 96 per cent of ne homes in Con Edison's gas servic area. Six years ago that figure wa 16 per cent. At the same time, stea is gaining in popularity and toda practically all large new buildings o Con Edison steam mains are takin steam for heating; many are als using it for air conditioning.

Adequate wiring, in older build ings, encouraged by the company has accelerated at a phenomenal rat —especially last year.

In 1959, dwelling units totalin more than 56,000 in 1,700 apartmen houses were rewired—more than th total in the previous five years whe the promotional rewiring progra began. The dollar value of rewirin dwelling units last year alone totale approximately $15 million. Non-resi dential buildings also were rewire extensively. Through 1959, mor than 19 million square feet of rent able area were rewired providing a additional riser capacity of 61,22 kilovolt-amperes.

In addition to providing mor work for the community, the progra is a significant stimulant to financ and business. Other promotiona efforts have recorded significant sale increases as a result of Con Edison' major appliance promotions.

1959 completed 75 years of suc cessful operation for Con Edison. I was the 137th year of Con Edison and its predecessors.

TEN Years of GROWTH in The BLACK HILLS of SOUTH DAKOTA

Fiscal year	1959	1954	1949
Electric revenues (thousands)	$ 6,794	$ 4,229	$ 2,509
Kwh sales (thousands)	358,332	205,648	106,160
Number customers	29,896	26,820	19,863
Common stock equity (%) ..	37.5	25.4	19.2
Earnings per share (common)	$ 2.53	$ 2.08	$ 1.92

An Annual Report will be mailed on request.

BLACK HILLS POWER AND LIGHT COMPANY

RAPID CITY, SOUTH DAKOTA

Consumers Power Company

Jackson, Michigan

A. H. AYMOND, JR., *Chairman of the Board*

CONSUMERS Power Company this spring began construction of a 0,000 electric kilowatt nuclear electric plant at Big Rock Point on Lake ichigan.

This plant is scheduled for operation late in 1962. For four and a half years thereafter it will be the location of a research and development program to be carried out by Consumers Power Company and General Electric Company under contracts with the Atomic Energy Commission. The reactor will be of the boiling water type, and the research and development program will have three basic objectives: to increase heat output without increasing the size of the reactor core, to lengthen the life of the nuclear fuel, and to lower the cost of fuel fabrication. Through this research program it is hoped to increase the capacity of the plant 50 per cent, making it 75,000 electric kilowatts.

Although small in comparison with Consumers Power Company's major coal-burning plants in southern Michigan, the nuclear plant will be larger than any other in the northern part of the lower Michigan peninsula. The territory extending north to the Straits of Mackinac from a line between Bay City and Muskegon is, to a considerable degree, tourist and resort country. It is the home, however, of many small industries as well as a number of rather large industrial enterprises. The new Mackinac bridge and the deepened St. Lawrence Seaway have heightened the likelihood of further industrial development. The site of the nuclear electric plant at Big Rock Point was chosen with this likelihood in mind.

The nuclear plant will not produce electric power as cheaply as it can now be produced in conventional electric plants in Outstate Michigan, but we expect that it will make a significant contribution to the eventual achievement of economic electric power.

Meanwhile, Consumers Power Company is proceeding with the expansion of its steam-electric generating system farther south in Michigan. Unit No. 1 of the new Dan E. Karn plant on Saginaw Bay (Lake Huron) near Bay City went into service in November 1959, bringing total system capacity to 2,271,000 kilowatts, more than three and a half times what it was at the end of World War II. Construction of a second 265,000-kilowatt unit at this plant is going forward. Unit No. 2 is scheduled for operation in 1961.

Also under construction is the first 265,000-kilowatt unit of a new steam-electric plant on Lake Michigan at Port Sheldon, 30 miles west of Grand Rapids. This plant is to be known as the James H. Campbell plant and the first unit is scheduled for operation in 1962.

Completion of the Karn and Campbell units has been timed, of course, to coincide with expected growth of electric demand. Company studies support the estimates of the Bureau of the Census and other agencies that the growth of Outstate Michigan will continue at its recent high rate through the decade of the sixties and on into the more remote future.

(*Continued on page* 68)

Experience Counts

We have been bankers to the utility industry since 1882. Our activity in this field is a special interest with us and an important part of our total business. We welcome opportunities for further service to the industry through both our Commercial Banking and Corporate Trust Departments.

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The Dayton Power and Light Company

Dayton, Ohio

JAMES M. STUART, *President*

THE completion of the expansion program at our Frank M. Tait generating station gives us a comfortable reserve for a few years. This $43 million project resulted in a net system generating capability of 815,000 kilowatts—against a 1959 net system peak demand of 585,000 kilowatts.

The site for our next station has been purchased. It is near the town of Manchester, Ohio and across the Ohio river from Maysville, Kentucky. It consists of approximately 1,000 acres along the river on a location that has never been flooded.

We will be ready to build at this location well in advance of the need for more capacity. Right-of-way for a 345,000 volt line from the new plant to our existing system is being procured.

The momentary "catching up" has made it possible to reduce budgeted funds for electric construction in 1960 to $10,834,800.

Major item in electric construction will be a $2.5 million improvement in the interconnection with Cincinnati Gas and Electric Company. Present tie-in is at 69,000 volts. Now there will be an additional one at 138,000 volts.

Our gas division expects to pass one of its major milestones in 196 when it puts its 200,000th custom in service. This division will insta 100 miles of new gas mains in 196 This will make the eighth consecuti year that additions have exceede 100 miles.

A seven-million gallon cavern fo the storage of liquid petroleum wa completed in time for a test this la winter. It was effective in shavin peak requirements from our whole sale natural gas supplier. Two mix ing plants are now available to intr duce the LP gas at critical times. A third mixing plant will be built i 1960.

Delaware Power & Light Company

Wilmington, Delaware

F. P. HYER, *President and General Manager*

DELAWARE Power & Light Company and its subsidiaries, The Eastern Shore Public Service Companies of Maryland and Virginia, continue to be optimistic about the future growth of business throughout the Delmarva peninsula service area. Population-wise Delaware has been the fifth fastest growing state in the nation in the past decade. Reports of the company's New Business Department regarding prospects in New Castle county, Delaware (the source of 65 per cent of the company's operating revenue) are particularly optimistic. It has listed 8,700 residential housing units to be constructed in developments which number 40 or more units each, as compared to 6,800 units listed a year ago—a gain of almost 28 per cent. The company's Industrial Sales Department reports negotiations under way with 17 major industrial prospects whose requirements together with increased demands of existing industrials could total over 200,000 kilowatts. In fact, the volume of additional industrial power applications now under negotiation is greater than during any previous period in the company's history.

To provide for this growth our construction program calls for the expenditure of about $130 million ove the five-year period 1960-1964—$1 million of which will be spent i 1960.

We are proceeding as fast as possible with the design and construction of a 66,000-kilowatt addition to th Delaware City generating station t be in service at the end of 196 Preliminary design and engineerin on a 150,000-kilowatts addition t Edge Moor generating station will b under way during 1961, and opera tion expected in the summer of 1963 Substantial expenditure for the in stallation of an additional 100,000 kilowatts unit for operation in 196 is contemplated in the five-year fore cast. The $130 million program is al located approximately 43 per cent t electric production, 23 per cent t electric distribution, 20 per cent t electric transmission and substations 10 per cent to gas storage transmis sion and distribution, and 4 per cen land and common plant.

The company contemplates no per manent financing during 1960, al though the five-year expansion pro gram may involve security sales amounting to about $59 million.

The company's publicity program will acquaint the public with its long range plans to provide adequate, de pendable utility service to satisfy the future requirements of all users o its service on the Delmarva penin sula. It will repeatedly emphasize the fact that the company has accepted re sponsibility for providing the future utility service needs of its service area and is planning ahead accordingly.

TWENTY-FIVE YEARS OF PROGRESS

	December 31 1959	1949	1934
Utility plant at original cost ...	$355,321,298	$140,894,515	$68,890,949
Long-term debt	133,316,000	65,000,000	50,276,500
% Debt of net utility plant	43.8%	55.1%	74.2%
% Debt of total capitalization ..	45.4%	53.9%	55.5%
Preferred stock	41,391,656	21,533,455	22,008,000
Convertible preference stock	8,400,440	5,234,020	—
Common stock and surplus	110,457,215	28,748,722	18,300,118
Total capitalization	293,565,311	120,516,197	90,584,618
Operating revenues	103,747,847	44,851,209	12,030,480
Net income	15,477,028	6,858,726	936,513

Dean H. Mitchell
President

NORTHERN INDIANA PUBLIC SERVICE COMPANY

Hammond, Indiana

The Detroit Edison Company

Detroit, Michigan

WALKER L. CISLER, *President*

DETROIT Edison system peak demand, total kilowatt-hour output, generating capability and plant investment were all at new high levels during 1959. A net system capability of almost 3.8 million kilowatts was reached with the addition of the 325,000-kilowatt Unit No. 5 at St. Clair and a 19,100-kilowatt unit installed in conjunction with a new 300,000 pound per hour steam boiler at the Beacon street heating plant.

With a greater proportion of load carried at the more efficient St. Clair and River Rouge plants, and a reduction of 29 cents per ton in coal freight rates, substantial savings in fuel expense were realized. On the average, a kilowatt-hour of electricity is now produced with eight-tenths of a pound of coal, 20 per cent less than was required ten years ago.

Company employes numbered 10,143 at the year end—7,822 in operation and maintenance and 2,321 in design and new construction. The total is almost 400 less than at the end of 1958 and 1,100 less than in 1956. The trend continues of serving more customers with fewer employes, averaging 165 customers per employe assigned to operation and maintenance in 1959.

Construction expenditures for 1960 will approximate $70 million, up from $59 million in 1959. It is estimated that construction expenditures will average $50 million annually during the next five years. While this is still a substantial program, it is considerably less than the $75 million average of the past decade.

Except for the Enrico Fermi atomic power plant, St. Clair Unit No. 6 is the only turbine generator under construction at present. With a rating of 325,000 kilowatts, it will be completed and placed in service in April 1961. With this addition, reserve margins will be adequate for the next few years, even with steadily increasing power loads.

A major endeavor already under way is the improvement of transmission and distribution systems to serve efficiently the growing power needs of the area. A 51-mile line designed for ultimate use at extra-high voltage is 95 per cent complete and will be energized at 120,000 volts early in 1960. During 1959 the first customers were served from a new 13,200 volt distribution system, permitting a conductor to carry nearly three times the load that would be possible on the 4,800 volt system.

Power Reactor Development Company is proceeding with the nuclear facilities of the Enrico Fermi atomic power plant. Atomic Power Development Associates, Inc., also a nonprofit organization, is providing the nuclear engineering for PRDC. Current emphasis is being devoted especially to the fuel cycle. The Detroit Edison turbine generator and associated facilities are nearing completion. Low power nuclear testing is scheduled to begin in January 1961.

Much attention is being given to sales related activities—area development, industrial diversification, the greater and better use of electric power by all classes of customers. Population and industrial trends in the area are very favorable to growth.

Detroit Edison is interested in all kinds of research and development that may have a bearing on future business. In November 1959 an Advance Projects Committee was established, under the direction of the Manager of System Development, to keep abreast of new developments with long-range application to power generation, transmission, distribution and new uses. The company's Engineering Research Department is also engaged in these activities.

The corporation is now entering a period when construction funds will be obtained largely from internal sources. With a lower level of construction during the next few years, the management expects to raise about three-fourths of capital needed through depreciation allowances, retained earnings and other internal sources. This is a change from the past, when a smaller percentage of the capital needs was obtained internally.

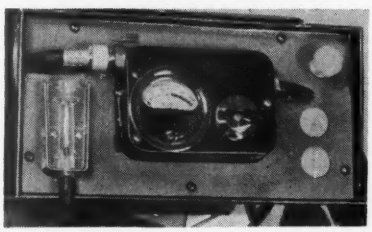
As the revenue growth continues and capital expenditures and related fixed costs hold close to present levels, earnings for 1960 and the next few years may be expected to show improvement.

(*Continued on page 70*)

Operator just stops the Gas Hound, pushes the hydraulic lever down, reads the explosion meter and raises lever.

Gas Hound backs up to walls to check service entrances. An optional foot probe lets you test anywhere, anytime.

NEW ONE MAN machine reduces bar-leak survey costs up to 80%



Gas Hound's instrument panel contains (A) probe air flow indicator, (B) explosion meter, (C) probe limit indicator lights and (D) limit light switch.

Three seconds per probe

At the flip of a lever, hydraulic pressure pushes the probe rod into the ground, the sample is taken, the reading is given and the probe removed. One man can make 100 tests an hour! A strong, continuous vacuum lets you detect leaks under streets from the curb and also clears the probing system after each test is completed.

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LEADING THE WORLD IN ELECTRIC POWER

Florida Power & Light Company

Miami, Florida

ROBERT H. FITE, *President and General Manager*

LOOKING back over a short or long period, it is most exciting to review Florida's almost unbelievable economic progress and most rewarding to see the part our company has been privileged to play in that progress.

For 100 years, Florida has approximately doubled her population every twenty years, with very little deviation.

Her very rapid growth, even under the impact of four wars and twenty-three depressions and recessions, has consistently been the steadiest in the nation.

From 1950 to 1959, with two recessions holding back much of the country, Florida jumped from 20th place to 10th place, populationwise. Her gain of almost two million was the second largest, numerically, in the country. About one and one-quarter million of these were families moving in from other states, bag and baggage, with their breadwinners starting their own businesses, plying their own professions or filling the new jobs that were being constantly created by Florida's rapidly expanding industry, commerce and tourism.

New homes—over 90,000 in 1959 alone—new hotels and motels, new shopping centers and thousands of new factories had to be built. During the past ten years, Florida's numerical increase in manufacturing employment has exceeded that of such giant manufacturing states as Michigan, Illinois, Indiana, Pennsylvania, New Jersey or Connecticut.

Each and every one of these new buildings, from the smallest cottage to the largest hotel, shopping center or factory, had to have dependable electric power promptly. We met this challenge and are proud of our record of service.

At the end of World War II the total generating capability of our interconnected system was not even as large as the new generator we are installing this year at our Port Everglades power plant. In the past five years we have increased our system capability to a total of 1,648,000 kilowatts, an increase of 122 per cent. New generating equipment, which we have ordered and scheduled for the next five years, will add 1,430,000 kilowatts. This will bring our total capability to more than 3 million kilowatts by the end of 1964.

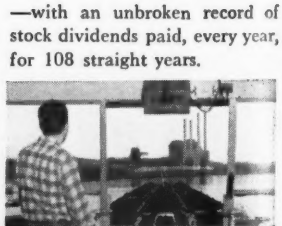
Our four-year construction expenditures will total an estimated $485 million, to serve an estimated increase of 276,000 customers and supply an estimated increase in energy sales of 5.9 billion kilowatt-hours.

We will be serving hundreds of thousands of families and thousands of manufacturers and businesses that don't even know today that they will be living and working in Florida by the end of 1964.

People just love to live and work in Florida.

THE CHECK THAT'S BEEN MAILED EVERY YEAR FOR 108 YEARS

There's something solid about Cincinnati . . . and the great industrial area of which it's the center. Here we have a steady growth of widely diversified industry. Here, you find one of the nation's most skilled labor forces . . . with pride in its exceptionally high productivity rate. And it's hard to imagine a more ideal location as a distribution center. All this has given the area's economy an enviable stability. It's not surprising that in such a community the Gas & Electric Company would reflect that *same* stability —with an unbroken record of stock dividends paid, every year, for 108 straight years.



The Ohio River, which will carry 3 times as much commercial tonnage as the Panama Canal by 1963, is a great asset to the Cincinnati area. It will become even more important as the high lift dam program, now in progress, is completed.

THE CINCINNATI GAS & ELECTRIC COMPANY

108 years of unbroken dividend history

General Public Utilities Corporation

New York, New York

A. F. TEGEN, *President*

THE year 1959 marked the end of five full years of operation of the GPU domestic subsidiaries as a fully inter-connected electric system. Following is a brief review of major system developments during that period, as set forth in the company's annual report:

In 1954, the initial 230,000 volt "kilowatt highway" of the GPU system was completed. At the end of 1959, the GPU system had in excess of 500 miles of 230,000 volt transmission facilities in operation—more than double the mileage of the initial installation. This approximates the combined corresponding mileage of 230,000 volt transmission lines of all the neighboring Pennsylvania and New Jersey utilities.

In 1954, the initial two generating units of the Shawville generating station were also completed.

In 1959 a third unit was placed in operation at the Shawville station. This unit has a net effective capability of 177,000 kilowatts. The third unit increased the total net effective capability of the Shawville station to 434,000 kilowatts, making it the largest generating station in the GPU system. Another unit of 177,000 kilowatt net capability was scheduled for service in April 1960.

In 1954 the system sold 6.5 billions of kilowatt-hours to customers and neighboring utilities. In 1959 it sold 9.4 billions of kilowatt-hours, an increase of 44 per cent.

In 1959 the gross hourly peak load passed the 2 million kilowatt mark, an increase over 1954 of 44 per cent in gross peak load.

In 1959 an average of 10,711 heat units (Btu) were required by the GPU domestic system to produce a kilowatt-hour of electric energy, a reduction of 12 per cent from the average 12,149 heat units required in 1954.

Over this five-year period, the system has raised $231 million of capital: $147 million from the purchaser of senior securities, $41 million from the sale of additional shares of GPU stock, and $43 million from reinvestment of earnings retained in the business.

The net result has been that, with improvement in operating efficiencies and economies and reductions in current income taxes by reason of the employment of accelerated depreciation, the system has been able to provide better service to customers and earn a reasonable return for security-holders without raising the general level of electric service rates, despite the impact of inflation on virtually all costs of doing business.

The domestic subsidiaries have budgeted a cash requirement of $78 million for new construction in 1960, compared with $70.1 million expended in 1959. The principal categories and approximate amounts scheduled for 1960 are as follows:

Facilities	*(Millions)*
Generation	$19.2
Transmission	13.6
Distribution	38.1
Other	7.1
Total	$78.0

(*Continued on page* 72)

Management Premise:

Growth in Service Founded On Progress in Earnings

We believe that an adequate return on investors' capital and improved results for the shareholder are the only foundation on which expansion and improvement of consumer service and increased employee benefits can be soundly based.

In 1959, for the 15th year in a row, Citizens Utilities attained a new high in per share earnings. This record is unsurpassed in the utility industry.

Our 1959 Annual Report records Citizens' investor and public service achievements and the management fundamentals which underlie the conduct of this enterprise. Copies are available upon request to Martin Kuric, Executive Assistant.

CITIZENS UTILITIES COMPANY

ADMINISTRATIVE OFFICES: RIDGEWAY CENTER, STAMFORD, CONN.

Diversified Services to More Than 76,000 Customers
In 8 States Across the Nation:
ARIZONA, CALIFORNIA, COLORADO, IDAHO, ILLINOIS, MAINE, PENNSYLVANIA and VERMONT

Georgia Power Company

Atlanta, Georgia

J. J. McDONOUGH, *President*

ANTICIPATING an outstanding period of industrial, commercial and residential growth for Georgia in the years ahead, the Georgia Power Company will invest approximately $55 million in new facilities in 1960 to serve the electrical needs this growth will require.

The company's planning engineers have reported that Georgia's expansion rate for the next three years will increase requirements for electric power by a billion kilowatt-hours a year. In addition, present forecasts are that similar growth will continue beyond the next three-year period.

Construction will begin this year on plant McDonough, a $76 million steam plant on the Chattahoochee river 12 miles north of Atlanta. The plant will have a generating capacity of 500,000 kilowatts, and its two 250,000-kilowatt units will be the most powerful generating units on the company's system. The first unit is scheduled for completion in 1963 and the second in 1964.

One of the major construction projects for 1960 is a new 30,000-kilowatt hydroelectric generating plant at North Highlands dam in Columbus. The new powerhouse and generating equipment will replace existing facilities of 6,900-kilowatt capacity constructed in 1901. The dam is sound and fully useable, and therefore will not have to be rebuilt. Scheduled for completion in June, 1962, the project will cost $7.6 million. Of this total, $1.8 million will be expended this year.

Georgia Power will invest $8 million during 1960 in continuing work on the Southern Electric Generating Company's million-kilowatt, steam-electric generating plant near Wilsonville, Alabama. The plant is owned jointly by the Georgia Power Company and the Alabama Power Company.

The first 250,000-kilowatt unit of this plant was placed in service in April of this year. A second unit of like capacity will be completed later in the year and work will continue on Units 3 and 4 which will go into service in 1961 and 1962. Total cost of the new plant will be approximately $150 million.

During 1960, 380 miles of transmission lines, including 185 miles of 230,000-volt lines, are to be completed. Six hundred thirty-five miles of lines will be added to the company's distribution system.

In Atlanta, construction is continuing on a modern, all-electric, 22-story building which will house the company's general offices. The building is being built and financed by an independent contractor and will be occupied by the Georgia Power Company under a long-term lease.

The company is continuing its active participation in study, research, development and construction projects designed to develop an efficient and economical means of producing electric power for nuclear energy.

Early in 1960, the Georgia Power Company undertook a revolutionary new plan designed to help eliminate

(*Continued on page* 74)

PUBLIC UTILITY SECURITIES

Underwriter

Distributor

Dealer

Merrill Lynch, Pierce, Fenner & Smith

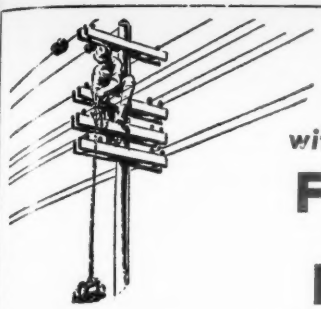
INCORPORATED

Underwriters and Distributors of Investment Securities

Brokers in Securities and Commodities

70 PINE STREET NEW YORK 5, N. Y.

130 offices here and abroad



EQUIP YOUR WORK CREWS *with dependable*

FITLER MANILA ROPE

Fitler Manila Rope is lubricated against internal friction while under load. It is waterproofed to keep it flexible, wet or dry, and rotproofed to arrest the growth of mold, mildew, fungi and bacteria.

For your protection Fitler Brand Manila Rope is identified by the Blue and Yellow Trademark.

"WATERPROOFED" AND "ROTPROOFED"

FILTER POLYETHYLENE and POLYPROPYLENE ROPES are strong and durable

Sold by Industrial Distributors everywhere

THE EDWIN H. FITLER COMPANY

Est. 1804

Division of Columbian Rope Company

Philadelphia 24, Pa. New Orleans 17, La.

INDUSTRIES FIND FAMOUS NAMES FOR NEIGHBORS

IOWA POWER AND LIGHT COMPANY DES MOINES, IOWA

in Iowa Power-Land

Among Iowa Power and Light Company's largest gas and electric customers in Central and Southwest Iowa you find many nationally famous names: Armstrong Rubber; Firestone Tire and Rubber; Ford Implement; Great Lakes Pipeline; Inland Mills; John Deere; Marquette Cement; Meredith Publishing; National Carbon & Carbide; and Penn Dixie Cement, to name a few. Growing with the expanding economy of this balanced agricultural-industrial area, Iowa Power can offer a climate for industrial expansion that includes everything management is looking for . . . plus gracious living within minutes of work.

A Copy of our 1959 Annual Report of Progress Is Yours for the Asking

IOWA POWER AND LIGHT COMPANY

823 WALNUT STREET DES MOINES 3, IOWA

Problem Solving

The consultant's job is to help solve the unusual problem, often the one you could handle yourself, if you just had the time.

If you have a specific problem you would like to discuss with the appropriate specialist on our 750-man staff, we would welcome the opportunity to talk with you.

Some of our specialized consulting areas include:

- *Accounting*
- *Advertising*
- *Consulting and Design Engineering*
- *Depreciation*
- *Economic Feasibility Studies*
- *Electronic Data Processing*
- *Financing*
- *Gas Supply Problems*
- *General Management*
- *Industrial Relations*
- *Insurance*
- *Marketing*
- *Public and Stockholder Relations*
- *Purchasing, Expediting and Inspection*
- *Rates and Other Regulatory Matters*
- *Utility Operations*

Commonwealth

SERVICES INC.—ASSOCIATES INC.

Management and Business Consultants
Consulting and Design Engineers

— OFFICES —

NEW YORK 22, N.Y.
300 Park Ave.
MUrray Hill 8-1800

JACKSON, MICHIGAN
209 E. Washington Ave.
STate 4-6111

HOUSTON 2, TEXAS
M & M Building
CApital 2-9171

WASHINGTON 6, D.C.
1612 K Street, N.W.
STerling 3-3363

the serious problem of inadequate wiring in Georgia homes and to enable customers to enjoy more of the benefits of electric living.

Under the plan, the company will pay a large share of the cost of installing heavy-duty service entrance wiring in residences on its lines. The payments will be made to the electrical contractor doing the work and the wiring will be the property of the company. To qualify, a customer must install certain circuits of his own as well as certain designated appliances that require the heavy-duty wiring.

Georgia Power will invest about $7 million this year in this program. The plan is being enthusiastically received by architects, contractors, appliance dealers and homeowners.

Gulf States Utilities Company

Beaumont, Texas

ROY S. NELSON, *Chairman of the Board and President*

THE availability and abundance of large supplies of oil, natural gas, sulphur, salt and other natural resources together with deep water transportation and a good supply of fresh water have made the Gulf Coast area of Texas and Louisiana an ideal location for petro-chemical plants. A large part of this area, comprising the service territory of Gulf States Utilities Company, has been the site of tremendous industrial expansion, making it the petro-chemical center of the world. This and related industries are heavy users of electric power, an adequate supply of which is available at attractive rates. Many nationally known chemical companies have established new plants or expanded existing ones.

To keep abreast of this continued expansion, our company increased its generating capability by 39 per cent in 1959 and plans to add 27 per cent more in 1960. Additional units under construction and to be in service by 1963 will result in doubling our generating capability during the five-year period ending with 1963.

The Hartford Electric Light Company

Hartford, Connecticut

RAYMOND A. GIBSON, *President*

SATISFACTORY and continuing growth is expected for The Hartford Electric Light Company this year and next. Stemming from the population increase and greater use of electric appliances, this growth will be stimulated by the ever increasing demand of our customers for electric power.

Our record in 1959, and in previous years, supports even the most conservative predictions. Total kilowatt-hour sales in 1959 were 10 per cent greater than in 1958. They are expected to increase at least 7 per cent in 1960.

The electrical construction budget for 1960 is approximately $10 million. Although we are replacing four low pressure boilers with two new ones at our South Meadow plant, the major portion of this budget represents additions and improvements to the distribution plant.

On the production side of the picture, we look forward to the day when our first nuclear power plant, The Yankee Atomic Electric Company in Rowe, Massachusetts, will go into operation. Expected to "go critical" late this year, it features a pressurized water reactor and rated output of 134,000 kilowatts. Our company is one of Yankee's ten private utility sponsors, each of which will receive a share of the output in accordance with its investment.

Urban redevelopment of certain areas in the city of Hartford is well under way. Civic leaders, businesses, and citizens alike are excited about Constitution Plaza, the first giant step in the long range program of rebuilding planned for downtown Hartford. Needless to say, our own load in these areas will increase proportionately, and we expect to do our share in the construction of new underground distribution facilities.

All factors seem to point to a bright and prosperous future for The Hartford Electric Light Company.

It took 29 yrs. research to make
JAQUES hydraulic
HOLE DIGGERS
Fastest, Strongest, Safest
most economical!
Time-and-money-saving features of Jaques All-Hydraulic Hole Diggers took 29 years to develop. Rugged, versatile Jaques TJ-254 mounts on standard trucks, drills holes up to 48" diameter, to 25' depth, in hardest soil or rock — FASTER, CHEAPER, EASIER than competitive machines! Fewer moving parts insures minimum down-time, maintenance, operating costs. Shock-resistant device relieves strain in rock digging. Simple to operate with only 3 primary adjustments. FREE DEMONSTRATION WILL PROVE THESE CLAIMS!!
Jaques TJ-254 digging at 30 degree angle
Operates at up to 45 degrees
FREE
TEXOMA ENTERPRISES, INC.
HIGHWAY 75 North, SHERMAN, TEXAS
Send me FREE detailed literature.
Have representative call. No Obligation.
NAME
TITLE
ADDRESS
CITY
STATE
TEXOMA ENTERPRISES, INC.
HIGHWAY 75 NORTH • SHERMAN TEXAS

Illinois Power Company

Decatur, Illinois

ALLEN VAN WYCK, *President*

DURING 1959, Illinois Power Company completed construction of its largest generating unit. This new unit of 227,000 kilowatts at the Hennepin power plant represents almost one-fourth of the Illinois Power total generating capacity. The necessary appurtenances in connection with this unit were also completed last year. As a result of these completions, the requirements for electric construction are less in 1960 than during the past several years.

Total company expenditures for the 1960 construction program are estimated at $24 million, of which about $12 million will be devoted to the electric program. Generally, work in the electric department will consist of expanding and increasing distribution facilities to keep ahead of the growing demand of present customers and to serve new customers.

Illinois Power expects to spend between $11.7 million and $17 million during 1960 for the gas construction program. The company has located and is testing underground storage fields for natural gas in the southern portion of its territory. Two such fields have been successfully developed and during 1960, distribution systems will be expanded so this storage gas may be more widely distributed. In addition, new contracts have been signed with other natural gas pipeline companies which are expected to supply the company with substantial additional supplies of natural gas for the other portions of the territory served. This gas will probably be available before the beginning of the next heating season and if the anticipated quantities of gas become available, the total supply in some areas will be increased as much as fifty percent.

As a result of the increased deliverable capacities during peak weather conditions, Illinois Power is proceeding with a gas construction program that will extend gas distribution systems to fringe areas in many of the communities where gas service is already available. New distribution systems will also be built to supply natural gas to communities which had not previously enjoyed this service.

Illinois Power will continue its vigorous industrial development program to develop additional business among present customers and to continue to bring new business into the territory served.

Indianapolis Power & Light Company

Indianapolis, Indiana

O. T. FITZWATER, *President*

INDIANAPOLIS Power & Light Company is at the crossroads of America, near the center of population and manufacturing of the United States. It operates in a well-diversified area having excellent growth potential and inherent resistance to reverses in the business cycle. Therefore, prospects seem excellent for substantial growth in the years ahead, based on the continuing progress of this area, the constant trend toward greater use of electricity by customers in all classes, and the promotional programs of various branches of the electric industry.

Our tentative load projections through 1965 indicate continuing increase to a peak demand in that year 52 per cent above the highest peak to date. Additional capacity will be needed by our system to keep ahead of such growth, and our construction costs in the six years 1960-1965 are estimated to total $118 million, including $18 million this year.

Under construction at our Elmer W. Stout generating station is the station's sixth unit, adding 105,000 kilowatts to system capability. It is scheduled for completion by May of 1961, in time for the summer peaks of that year.

Financing plans for construction include the sale of $12 million first mortgage bonds next September, with additional financing in subsequent years dependent on market conditions at the time the funds are required.

Earnings of $2.65 per common share are estimated for the year 1960, as compared with $2.46 per share earned in 1959. This is based on indications that 1960 will be a record year for business generally, although perhaps not the boom year originally anticipated. For the first quarter this year our earnings per common share were 80 cents, or 7 cents more than in the same period last year.

Our company is carrying on an extensive research, development and improvement program to find new and better ways to design, build and operate the system and to improve service to customers. We believe this is an effective way to cope with the pressures of continued inflation, and to assure the long-term financial well-being of the company.

Iowa-Illinois Gas and Electric Company

Davenport, Iowa

CHARLES H. WHITMORE, *President*

RETAIL sales, construction, employment, and industrial production all improved sharply during 1959 over and above a highly favorable trend of some years standing throughout our service area.

Indicative of the prevailing conditions are a 14.3 per cent increase in kilowatt-hour sales in 1959 over 1958 as compared to a 3.5 per cent increase in 1958, and a 15.9 per cent increase in therms of gas sold in 1959 by comparison with a 3 per cent increase in 1958.

There was less unemployment than during any of the previous five years.

During the year gas service was extended to seven communities adjacent to our established gas service area. During the same period twenty-five-year electric franchises were procured in three towns and twenty-five-year gas franchises in seven towns, including in both cases Iowa City, the home of the State University of Iowa.

In December 1959 the company's board of directors increased the cash dividend on common stock from $1.80 to $1.90 per share annually. A 5 per cent stock dividend was paid in addition to common shareholders of record on May 1, 1959, in keeping with the company's stated policy of issuing stock dividends "to the ex-

(*Continued on page 76*)

tent retained earnings invested in property are no longer needed to protect the regular dividend."

In 1960 a new all-time high total of approximately $23 million will be spent by the company on the expansion and improvement of its gas and electric facilities. Of this amount some $11 million will be spent on a $20 million expansion project at the Riverside generating station. Scheduled for completion May 1, 1961, this project provides for the installation of a new 125,000-kilowatt unit.

Other major construction projects scheduled for 1960 include a 161,000-volt transmission line interconnection with Union Electric Company, a similar interconnection within the present service area, new 69,000-volt lines, substations and a gas feeder line.

One of the more unique programs now being carried on is a program of study and discussion of the American Free Enterprise System with the entire employee organization participating in group meetings held monthly.

Another program with which considerable progress has been made is that of personnel productivity. During the past five years the employee organization of 1,447 people has increased 1 per cent in number by comparison with a 15 per cent increase in the number of customers, a 61 per cent increase in electric and gas revenues, and an increase of about 40 per cent in plant investment, from $94 million to $132 million.

Promotional programs in 1960 are centered on industrial sales, commercial lighting, adequate wiring, and major load-building appliances, with improvement of system load characteristics as the basic objective.

Iowa Power and Light Company

Des Moines, Iowa

A. PAUL THOMPSON, *President*

As part of a continuing program to improve the year-round use of the company's investment in property, new promotional rates have been put into effect designed to encourage the use of electricity during the winter for househeating and to encourage the use of natural gas during the summer for air conditioning. Greater consumer demands for air conditioning in recent years have shifted the electric peak load from December to one of the hot summer months. This has been true now for three years. An emphasis upon promotion of electric househeating will tend to make the use of the electric system needed for the summer loads more uniform during the winter months.

In the gas business just the opposite occurs in connection with the seasons. The terrific increases in the cost of gas during recent years, particularly in the demand part of the rate, or the fixed system charges, has presented a serious problem. These fixed charges must be paid throughout the year. They are determined by the amount of gas needed for delivery to the customers for househeating on the coldest day of the year. Thus, when the customer does not need the gas for this purpose a new market is needed for the sale of this gas during the summer months.

The promotion of gas air conditioning will tend to make the use of the gas system necessary for the winter loads more uniform during the summer months. Thus, the advantages of a combination utility come into play. Increased sales of electricity during the winter months improve the electric load factor and a further increase in the winter gas peak is partially offset. Similarly, an improvement in the gas load factor results from the use of gas air conditioning equipment and will partially offset a further increase in the summer electric peak.

The long-range success of this business is in uniformly increasing volumes and lower costs.

Iowa Southern Utilities Company

Centerville, Iowa

H. L. MANN, *President*

A DECADE of unparalleled growth and progress was completed at Iowa Southern in 1959. Total electric and gas revenues more than doubled during the period. Natural gas revenues were over six times as great in 1959 as ten years earlier, while electric revenues gained 89 per cent during the period.

The area served by Iowa Southern contains some of the richest farm land in the country and we serve over 9,000 rural customers. Industrialization of the area is steadily increasing, thus adding to the economic welfare and stability of the territory. The U. S. Gypsum Company will begin operations this year of a new mine and processing plant near Burlington. Ralston Purina Company is now operating a new plant constructed in Ottumwa late last fall. A plant for mining and processing of shale into haydite, a light weight aggregate for concrete, is now in operation by The Carter-Waters Corporation in Centerville. Other nationally known industries served, such as The Maytag Company, John Morrell & Co., Deere Manufacturing Co., Sylvania Electric Products, Inc., J. I. Case Co., and International Resistance Co., continue to show good growth.

Our construction budget of $4,425,000 for 1960 includes funds for natural gas distribution systems in several communities not now being served. With favorable allocation action in 1960 by the Federal Power Commission, our natural gas business will continue to be the fastest growing of our company. Natural gas sales in 1959 increased 15.4 per cent over 1958.

In the field of atomic power generation, Iowa Southern is one of 11 utility company members of Central Utilities Atomic Power Associates. This group is participating in the research and developmental costs of the 66,000-kilowatt Pathfinder atomic power plant being built near Sioux Falls, South Dakota, on the Northern States Power Company system.

The operation of Iowa Power Pool continues to prove its value. The basic purpose of the pool is to co-ordinate operation and integrate major investments in generation and transmission facilities, with accompanying advantages to the five participating Iowa companies from the standpoint of both service and cost. Studies now indicate it probably will be economically and technically desirable, from both our company and pool standpoints, for Iowa Southern to install a 100,000-kilowatt generating unit in 1965 at a site on the Mississippi river.

We are carrying on a vigorous program for promotion of selected load building appliances, including electric heating.

Kansas Gas and Electric Company

Wichita, Kansas

G. W. EVANS, *President*

KANSAS Gas and Electric Company is preparing for a second consecutive decade of rapid growth by earmarking more than $19 million for construction in 1960.

A power plant, lines, and other facilities are a part of the expansion program which involves the second largest one-year building budget in company history.

Now under construction is a 160,000-kilowatt generating unit at the new Gordon Evans power plant. It is scheduled for completion early in 1961. When it is completed, the company's generating capability will be 778,000 kilowatts compared with only 105,400 at the end of World War II. The new plant will include a MARC computer in line with the plans of increased automation.

High voltage transmission lines, linking power plants and distribution systems, also will be built during 1960 using bundled conductors to conserve overhead space.

Interconnections with neighboring utilities will be strengthened in 1960. At present, the company's system is interconnected at eight points with five other systems.

KG&E sold 200,000 shares of its commonstock in January, bringing a total of $9,092,000 to be used in financing construction. This was the first permanent financing required since 1956. No more is anticipated this year.

The 1950's were good years for KG&E. In the ten-year period, some 60,000 new customers were added and kilowatt-hour sales nearly tripled. Residential customers are using more than twice as much electricity, on the average, as they did ten years ago.

The company celebrated its golden anniversary in 1959. The efforts it made in that year are still bearing fruit this year. Since the first of the year, four major national awards have been presented to the company for its 1959 activities.

The latest of the awards was recognition extended by the U. S. Chamber of Commerce for the company's Economic Understanding Program for employees.

Earlier, the rural-residential sales program won an EEI award, largely for employee efforts in selling the sunlight controlled Friendship Yard Lantern as a part of the anniversary celebration. More than 4,600 of the lanterns were sold by employees. The lanterns were designed in Kansas, built by one of KG&E's customers, and sold nationally.

The home services department won the Laura McCall award for the second time, the first being in 1957. And for working 1,018,590 man hours without a disabling injury, EEI awarded the company its 14th safety record certificate.

Winter loads, particularly space and water heating, were again promoted during 1959 to help offset a summer-time peak. Nine schools in our service area now, or soon will, use electric heat as one result of the sales effort. KG&E has had a summer peak since 1953. Last year it rose to 508,400 kilowatts, an increase of 12.2 per cent over 1958.

Industrial development activity was

(*Continued on page* 78)

"Moon Shooting?" NOT US!

● At Iowa Southern, our growth is founded on the "down to earth" principles of sound management, trained personnel, modern methods and good service to our customers.

1949-'59 Results show:

Sales of Electric Energy	UP 107%
Sales of Natural Gas	UP 1157%
Operating Revenues	UP 113%
Gross Property	UP 131%
Net Income	UP 124%

We will gladly send a copy of our latest annual report on request. Write:

Iowa Southern Utilities COMPANY

CENTERVILLE, IOWA

increased during the year. A full-time director of industrial development services was added by the company This new department will enable the company to work more closely with the communities it serves in bringing in new industry.

The outlook for continued growth is good. A diversified, sound agriculture economy, a variety of natural resources, climate, location, and, above all, one of the nation's finest labor forces, assure us the area we serve will prosper and grow. The company's construction plans mean an ample supply of dependable electric service will always be available for the area.

The Kansas Power and Light Company

Topeka, Kansas

BALFOUR S. JEFFREY, *President*

THE Kansas Power and Light Company concluded the decade of the fifties in 1959 with plant and property of $206 million and revenues of $54 million. Since 1949, plant and property, and revenues have increased 118 per cent and 125 per cent, respectively.

KPL spent over $15 million for new plant facilities in 1959, of which 90 per cent was for new electric property. By the year end, construction work on a 125,000-kilowatt electric generating unit at the Lawrence station was nearing completion and on April 1, 1960, this unit was placed in service. This was the eighth generating unit to be added to the company's system in the past ten years and brings the total capability of the system generating stations to 571,000 kilowatts.

The company will spend approximately $12 million in 1960 on construction and replacement of electric and gas facilities which will bring expenditures on expansion to more than $175 million since World War II. Included in 1960 plans are a $2 million electric transmission expansion program and an addition to the Spivey gas compressor station which will increase its capacity by 50 per cent.

The 27,500 square mile territory served by KPL offers many advantages for industry. The economic diversification afforded by enormous agricultural production, vast mineral resources and dynamic industrial growth provides a balanced economy that results in stability for Kansas business and citizen alike.

During the past decade, this growing industrial activity has resulted in a 146 per cent increase in the value added by manufacturing and 37 per cent greater industrial employment. During 1959, 54 per cent of all new industries moving into the state located in the company's service area.

In KPL's program to promote the use of its services, the greatest emphasis is being placed on electric space heating which will result in improved annual system load factors. Considerable gains were shown in the field of space heating in 1959 and the company expects to show even better progress in the years ahead. All of the company's promotion programs are closely co-ordinated with the activities of appliance dealers, distributors, manufacturers, home builders, contractors and architects.

KPL expects electric sales to double during the next decade and the increase in gas sales to at least equal that of the past ten years.

Lake Superior District Power Company

Ashland, Wisconsin

G. A. DONALD, *President*

THE demand for electric service throughout the territory served by Lake Superior District Power Company continues to increase at approximately the same rate as the national average. During the past ten years, the company's maximum system demand increased from 38,605 kilowatts to 71,000 kilowatts, representing an average increase of 6.3 per cent per year.

In order to keep pace with the ever increasing requirements, work was started in early summer of 1959 to install additional boiler capacity at the company's Bay Front steam generating plant at Ashland, Wisconsin. At year's end this project was approximately 30 per cent complete, and represented expenditures of approximately $917,300. Total property additions during 1959 amounted to $1,736,600, and included, in addition to the boiler, expenditures for the completion of a new 33,000 volt transmission line, additions to, and replacement of, transmission substation equipment, and the conversion of distribution systems to higher operating voltages.

The company's 1960 construction budget is estimated to be $2,936,000. Of this total, $1,863,000 will be needed to complete the boiler addition, $210,000 will be used to improve transmission facilities, $774,000 is ear-marked for distribution extensions and improvements, and $89,000 will be used for miscellaneous expenditures.

Earnings available for common stock in 1959 were equivalent to $1.70 per share as compared with $1.57 per share in 1958. The past year's favorable earnings record resulted in the board of directors taking action on February 5, 1960 to declare a quarterly dividend of 32 cents per share on the common stock, an increase of 6.7 per cent over the previous quarterly dividend.

Long Island Lighting Company

Mineola, New York

JOHN J. TUOHY, *President*

THE Long Island Lighting Company is beginning its fiftieth year of service since incorporation in 1910, and the one-hundredth year since its predecessors began gas operations in 1859. Once more we look forward to new records in growth and earnings. Long Island is now one of the major metropolitan centers and has been classified as the nineteenth largest manufacturing area in the Nation, a long stride from the quiet farming and fishing villages only fifty years ago. We are proud that LILCO, although strained at times, kept pace with this growth and development.

I expect that 1960 will be another good year. Local employment has recently reached a new high and family income, which is higher in our

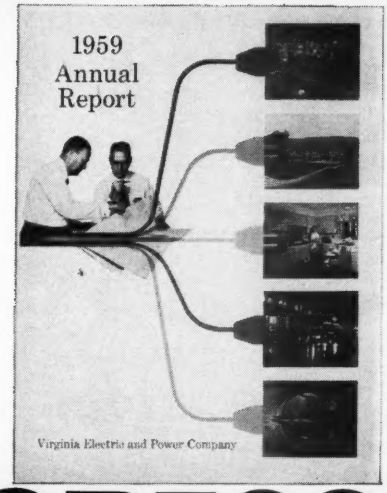
territory than in almost all surrounding areas, continued to increase. Population growth, home building and industrial expansion in 1959 were substantially above levels in 1957 and 1958. To date, 1960 is well above 1959.

To supply the growing demands for electric and gas service, we have invested more than $400 million in property during the past ten years and expect to spend over $250 million in the next five years. Construction in 1960 will aggregate about $48 million. This will raise our total plant to almost $600 million, more than three-quarters of which is less than ten years old. Five new generating units have been added since 1950. The last two units, at 185,000 kilowatts each, have more capacity than the entire system in 1950. Another 185,000-kilowatt unit will be completed this year at the Port Jefferson station, raising system capability to 1,256,500 kilowatts. We have also materially extended the network of transmission and distribution facilities throughout Long Island. Almost two-thirds of the electric construction program has been devoted to the delivery of energy and our investment in this equipment is now four times the amount in service ten years ago. Similar growth has taken place in the gas system where space heating sales have created very important gains. The potential market is even more promising.

Revenue and earnings have also grown. Electric and gas revenue of $136 million in 1959 has doubled in about five and one-half years. The annual rate of increase was 11.7 per cent for electric and 12.4 per cent per year for gas revenue. Earnings for the common stock have more than doubled and the compound rate of increase in per share earnings has been 9.1 per cent per year.

We look forward to further gains in the future, facing the problems of increasing cost with technological development and continued improvement in efficiency and productivity. These programs have enabled us to reduce the number of employees while doubling the volume of business. As a result profit margins are improving. We can serve our customers better and at prices which make electricity and gas their most economical household servants, while also giving share owners the security and growth of a sound investment.

(*Continued on page* 80)



the measure of PROGRESS

Progress can be a tangible thing . . . measured and evaluated, set forth in figures. More elusive but equally important is the *feel* of progress—the potential of a people and an area. Serving home, farm and industry in this growing area, Vepco keeps its finger on a strong and steady pulse. It is a part of *our* progress. In our 1959 Annual Report we have attempted to capture both. The *tangible*—the facts and figures, measurements and evaluations. The *potential*—the energy of a people, the plans . . . the promise. *1959 was our 50th year of progress.*

For your copy of our 1959 Annual Report please write to: The Secretary, Virginia Electric and Power Company

1959 HIGHLIGHTS

	1959	Increase over 1958
Property and Plant	$665,000,000	$40,000,000
Operating Revenues	$150,856,000	$11,196,000
Balance for Common Stock	$ 25,392,000	$ 1,855,000
Earnings per share (14,910,000 shs. 1959—14,200,000 shs. 1958)	$1.70	$.04
Number of Customers	840,000	25,700
Electric Sales—thousands of kwh	7,503,000	820,000
Service Area Peak Load—kw	1,617,000	178,000
Gas Sales—thousands of cubic feet	6,967,000	153,000

VEPCO **VIRGINIA ELECTRIC AND POWER COMPANY**
7th and Franklin Streets, Richmond, Virginia

Middle South Utilities, Inc.

New York, New York

EDGAR H. DIXON, *President*

"WE view the future with the same enthusiasm with which we review the past" is the optimistic note with which Mr. Dixon presents the system's annual report to stockholders.

Middle South Utilities, Inc. observed the tenth anniversary of its incorporation in 1959. It was formed for the purpose of continuing the advantages of common ownership of a utility system which has served in the states of Arkansas, Louisiana, and Mississippi for over thirty years.

As in 1949, the principal operating companies of the Middle South system are Arkansas Power & Light Company, Louisiana Power & Light Company, Mississippi Power & Light Company, New Orleans Public Service Inc. The system's service area extends from the Ozark region of Arkansas southeastward across the Mississippi Delta and south to the Gulf Coast of Louisiana.

Within these geographical limits the expansion of the Middle South system has unfolded. It has been an expansion related to the economic development of the area served. From a total of 625,461 electric customers at the end of 1949 the system has grown so that 896,603 customers were receiving electric service at the end of 1959. During the same time, average annual use of electricity per residential and rural customer has more than doubled, from 1,236 kilowatt-hours to 2,895 kilowatt-hours.

Total system operating revenues last year were $198.5 million, up 8.5 per cent over 1958. These revenues were composed of $169.8 million from the electric department, $20.9 million from natural gas, and $7.8 million from transit and other operations.

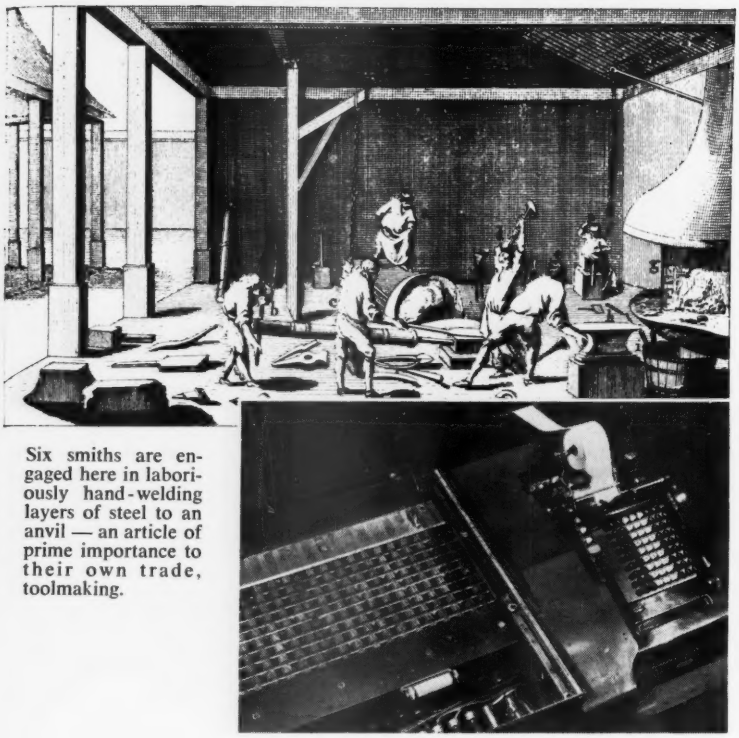
The growing economy of the Middle South area during the past decade has been highlighted by several major developments. Among these were extensive investments in basic industries, development of the tideland oil and gas fields, increased mineral production, and farm diversification.

Since 1949, the Middle South has led the nation in new discoveries and increases of reserves of crude oil, natural gas, and natural gas liquids. The area now ranks first in the nation in the production of bauxite; second in barite, bentonite, sulphur, natural gas, natural gasoline, and petroleum; fourth in salt; and fifth in manganese ore.

Total expenditures necessary to carry out the system's ten-year construction program have amounted to $597.3 million, of which $71.0 million was spent last year and $64.7 million in 1958.

Construction expenditures for new facilities for 1960 are budgeted at $81.0 million.

many steps vs. "ONE"



Six smiths are engaged here in laboriously hand-welding layers of steel to an anvil — an article of prime importance to their own trade, toolmaking.

This *exclusive* R & S service is made possible by this machine of our invention

It is a laborious affair to compile rate-bill analyses in your own office (even under the best conditions), compared with the time and labor-saving service offered by the "One-Step" Method.

Monthly rate-bill analyses are of *prime importance* to utility companies in "tooling up" for the future. R & S prepared monthly reports provide authenticated and respected material for presenting rate cases.

The "One-Step" Method is simplicity itself, full details are in our booklet, *"One-Step" Method of Bill Analyses.*

Write Dept. U-2 for your copy today.

RECORDING & STATISTICAL CORPORATION

100 Sixth Avenue · New York 13, N. Y.

Minnesota Power & Light Company

Duluth, Minnesota

CLAY C. BOSWELL, *President*

In projecting economic growth of its service area, Minnesota Power & Light Company estimates expansion of facilities costing $100 million will be required to keep pace with demands for power during the coming decade.

The rate of growth will be greater than during the fifteen-year postwar period ending December 31, 1959, during which the company and its subsidiary, Superior Water, Light and Power Company, spent approximately $90 million on expansion and modernization.

The company's outlook is based upon the area's past growth and its great assets in mining, shipping, tourism, wood products, oil pipelines and refineries and what is being done to stimulate its future growth.

With taconite processing and other beneficiation of iron ores making a strong economic impact on the area, the St. Lawrence Seaway has become a reality, adding more diversified growth prospects.

During 1959, Duluth-Superior became the nation's greatest grain as well as iron ore shipper. Resumption of package freight service to other Great Lakes ports and expectations of increasingly greater general cargo business, both export and import, hold bright growth prospects for the immediate as well as the long range future.

The Twin Ports emergence as a world port adds another lure for the vacationing family who provides one of the most important dollar producers in northern Minnesota.

While natural resources of streams and lakes serve the travel-recreation industry, the great forests of the state provide raw materials for the ever-growing wood products industries. They rank as the state's third biggest industry behind mining and agriculture.

A third oil pipeline into Duluth-Superior and continued expansion of the area's two oil refineries enhance prospects for development of petrochemical industry.

In 1959, our company set up an area development program and joined many other such efforts by industry, government and community groups to stimulate economic growth and community improvement in the area.

Continuation of an aggressive sales program and increased promotion of the concept of all-electric living are expected to add further to "bread and butter" business from residential, rural and commercial customers.

Establishment of a new all-electric rate in 1959 has encouraged electric heating of homes in the northland. There are now some 200 electrically heated homes in the area served by the company.

With completion of the second unit of the Clay Boswell steam electric station early this year, the company is in position to meet a substantial growth in load without adding more generating capacity. The construction budget of $3 million for 1960 is thus considerably less than in previous years.

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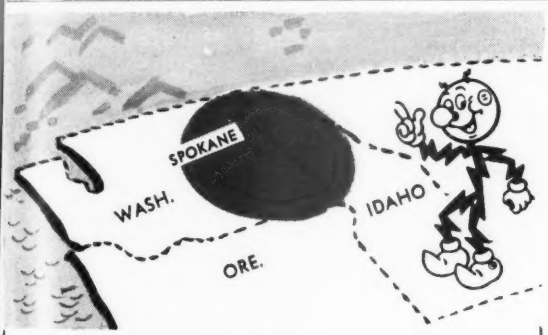


WWP PACES GROWTH OF A DYNAMIC WESTERN REGION

Eastern Washington and northern Idaho, served by The Washington Water Power Company, is one of the big, bright spots in the Pacific Northwest. Demand for electric power keeps up its steady pace (average residential consumption triples national average). Demand for WWP natural gas service is on a spectacular increase.

This area offers new opportunity to industry and commerce. For information, write The Washington Water Power.

THE WASHINGTON WATER POWER CO.

P. O. Box 1445, Spokane, Washington

WESTERN LIGHT & TELEPHONE COMPANY, INC.

2015 Forest Avenue — **Great Bend, Kansas**

ELECTRIC
TELEPHONE
NATURAL GAS
WATER

"Diversified utilities in a diversified area."

10 YEARS OF PROGRESS

200 COMMUNITIES
100,300 CUSTOMERS

	1959	1950
TOTAL ASSETS	$54,600,000	$28,200,000
Revenues		
Electric	$ 9,759,000	$ 4,825,000
Telephone	2,427,000	1,804,000
Gas	513,000	374,000
Water	277,000	114,000
TOTAL	$12,975,000	$ 7,117,000
NET INCOME	2,020,000	800,000

Mississippi Power Company

Gulfport, Mississippi

A. J. WATSON, JR., *President*

CONTINUED economic development and growth seems assured for southeast Mississippi, the area served by Mississippi Power Company. To provide for this anticipated growth our company has set up a budget for 1960-1962 of $43 million. A very large part of this budget will be spent on additional generating and transmission facilities.

A second 75,000-kilowatt generating unit was recently placed in operation at the Gulf Coast steam plant, located midway between Gulfport and Biloxi, and a third unit with a rated capacity of 112,000-kilowatts has been under construction for several months at this plant. It is expected that this unit will be placed in service in 1962. This will bring our generating capacity to over 400,000 kilowatts with the oldest generating unit on our system only fifteen years old.

115,000 volt transmission lines will be constructed to deliver this additional power to load centers and also to tie into our present transmission network. Additional transmission circuits will also be constructed to several cities and communities in the area.

Major expenditures will also be made in substation construction, both transmission and distribution. With rapidly developing commercial and residential load growth distribution facilities will be added and present facilities strengthened.

Intensified sales promotion programs are either under way or in the planning stage which we anticipate will contribute greatly to increased commercial and residential usage of electricity.

Our New Industries Department, organized in 1926 and the oldest such activity in the state, is optimistic about prospects for new industry locating in this area. At the same time many existing industries either have major expansion programs under way or in the advanced planning stage.

Missouri Public Service Company

Kansas City, Missouri

RICHARD C. GREEN, *President*

THE "Booming Sixties" started in excellent fashion for us with the ground breaking for the Western Electric Company's new Kansas City manufacturing plant at Lee's Summit, Missouri, on April 28, 1960. The first earth on the 340-acre site was turned when a microwave-operated relay set off several charges of dynamite, symbolic of the electronic products to be manufactured. This new $25 million plant will employ 5,000 people with a payroll of $25 million annually. Completion date for the 1,340,000 square-foot plant is scheduled for late 1961. Full operation is scheduled for 1963. Power demand is estimated to be 20,000 kilowatts. The Kansas City Chamber of Commerce estimates that additional payrolls of $29 million will come about as a result of the businesses necessary to supply 5,000 families and the satellite businesses that will spring up to supply Western Electric directly. This estimate is well supported by the experience of other cities where Western Electric has built plants.

Our net income and gross revenues for 1960 are expected to set all-time records. First quarter 1960 net income was $902,511 compared to $633,175 in 1959. Net income for the twelve months ending March 31, 1960, was $2,721,112 compared with $2,038,774 for the twelve months ending March 31, 1959. Revenues were $17,263,852, compared to $15,222,547. Earnings per share for the twelve months ending March 31, 1960, were $1.16 compared to 86 cents for the twelve months ending March 31, 1959.

Construction on our new Sibley generating station is on schedule and we expect to place the first 50,000-kilowatt unit into commercial operation in July of this year. The initial capacity of this plant will be increased to 100,000 kilowatts during the second quarter of next year when our second 50,000-kilowatt unit goes into operation. Ultimate capacity of the Sibley generation station is planned to be 300,000 kilowatts. Principal transmission line construction for 1960 will be a new 35-mile 161,000 volt line from Sedalia to Clinton, Missouri. Our construction expenditures for 1959 were $14,815,788. Our construction budget for 1960 is $9,750,000.

On October 3, 1959, we were successful in obtaining a 41 per cent increase in the gas supply we receive from Panhandle Eastern Pipe Line Company for the portion of our natural gas properties known as our North Central Gas project. At the time we received this supply we had on file 2,500 applications for natural gas. Since receiving this gas we have connected 1,100 customers and 750 customers are in the process of being connected for the first time or are adding additional load. We have several hundred applications to be processed. Negotiations for additional gas have recently been completed and Panhandle's allocation plan submitted to the Federal Power Commission on March 10, 1960 included an allocation to Missouri Public Service Company in the amount of 5,921,000 cubic feet. This will be a 38 per cent increase in our present contract demand. If the Federal Power Commission approves Panhandle's allocation plan our company's contract demand will be 21,421,000. This amount will fully cover the system demand which we expect our North Central Gas Project to reach when it is fully developed late next year. Gas revenues for the twelve months ending March 31, 1960, were $4,440,812, compared with $3,707,054, a year ago for the twelve months ending March 31, 1959.

Subdivisions and shopping centers continue to develop at a fast rate in the 50 per cent of Metropolitan Kansas City served by our company. As of March 1st, there were 183 subdivisions under construction with 17,512 platted lots, five shopping centers recently constructed, and eight proposed. Two shopping centers are planning expansions. Revenues from the Metropolitan Kansas City area will comprise 41 per cent of our budgeted electric revenues for 1960, compared to 30 per cent in 1955.

Montana-Dakota Utilities Co.

Minneapolis, Minnesota
CECIL W. SMITH, *President*

MONTANA-DAKOTA Utilities Co. is a combination electric and natural gas company. It began electric operations in eastern Montana and western North Dakota in 1924. At that time there was no integrated electric utility in the area and most communities were served by isolated small diesel electric generating plants, many of which provided dusk to dawn service only. Beginning in 1924, Montana-Dakota acquired the franchises and plants in these small communities and began construction of modern generating plants and interconnected transmission systems.

By 1930, the area was well covered by an integrated electric system which provided continuous service at greatly reduced rates.

At the same time that modern electric generating plants were being planned and constructed, supplies of natural gas on the Cedar Creek Anticline in eastern Montana were being developed. Construction of natural gas transmission lines was commenced in 1926 to furnish fuel for the new generating stations and for domestic space heating and other uses in communities where gas could be feasibly distributed. The construction of the generating plants and the use of this newly developed fuel for power generation made the construction of the gas transmission lines and the distribution systems in these communities feasible. Since natural gas was a new fuel in the area, development in the beginning was relatively slow and this handicap was overcome by the power plant loads.

Montana-Dakota Utilities Co. serves an area in eastern Montana, Wyoming and western North and South Dakota which is primarily agricultural. The development of irrigation in recent years and the improvement in farming methods has stabilized the economy. As a result, booms and recessions are leveled out so that the wide swings of business felt in other areas do not prevail here.

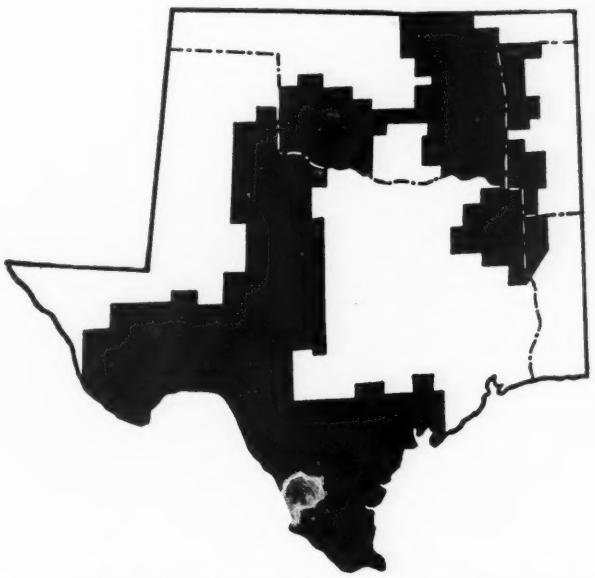
Due to poor farming methods and extremely poor crop conditions beginning in 1930, our service area suffered severe financial reverses and, during that period, acquired a reputation as a poor area economically. However, in the late '30's, conditions in the area began to change. Crops were good and, with the beginning of World War II, the entire economic picture in the area strengthened. This was primarily due to three factors: first, good crop conditions prevailed; second, higher prices were received for farm products; and, third, consolidation of farms and improved farming methods stabilized and increased production. These factors have continued to improve the agricultural situation in our area since World War II. Rural electrification and expansion of irrigation have likewise contributed to a stronger agricultural economy.

While agriculture forms the broad base of our area's economy, there are other important factors that serve to

(*Continued on page* 84)

Power for Progress in . . .

THE GREAT SOUTH WEST



2,700,000 kilowatts of electric generating capability serving 800,000 customers in four great states

CENTRAL AND SOUTH WEST CORPORATION

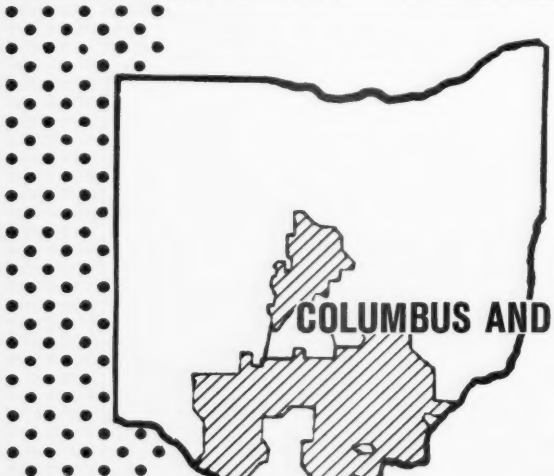
Wilmington, Delaware

Central Power and Light Company
Public Service Company of Oklahoma
Southwestern Electric Power Company
West Texas Utilities Company

diversify the principal income sources in our area. Beginning in 1951, when commercial oil was discovered in the Williston Basin, there has been an increasing amount of exploration and development drilling for oil in the company's territory. Approximately 150 oil and gas fields have been discovered in the Williston and Big Horn Basins since that time. In addition to the oil production, oil refineries have been established and are in operation at several points in North Dakota and Montana. In Wyoming and in South Dakota, bentonite mines and processing plants have been established. Recently a new clay products plant was constructed at Dickinson, North Dakota. A salt manufacturing plant is now under construction at Williston, North Dakota. Brick plants are located in South Dakota, Wyoming, Montana and North Dakota. The company owns and operates three lignite mines for furnishing fuel to its steam generating plants and to power plants of other utilities and to the general trade. The National Aluminate Co. and the American Colloid Co. have constructed plants in southwestern North Dakota to process a slack form of lignite for chemical purposes. Large military air and missile bases have been established at Rapid City, South Dakota, Minot, North Dakota and at Glasgow, Montana. These bases use natural gas for space heating in their operation.

Montana-Dakota Utilities Co. operates in the Upper Missouri Basin where the Fort Peck and Garrison Dams have been constructed on the Missouri river. Large hydroelectric installations have been made at these dams in order to utilize water which is released for navigation. In 1945, Montana-Dakota made an agreement with the Bureau of Reclamation to purchase power produced at these dams for its public utility use and to wheel power over its transmission lines for the Bureau to deliver and sell directly to the Rural Electrification Co-operatives. Twenty-four Co-operatives are now being served under this wheeling agreement. After November, 1960, there will be no firm power available to Montana-Dakota for its own use but during the navigation season, there will be surplus secondary power available. This permits the company to install larger generating units in its steam plants and to arrange for the maintenance of such units when this secondary power is available.

Due to the fact that natural gas is available in most of the larger communities served from the company's electric system, electricity is not used for water heating and cooking to the extent that it is in communities where natural gas service is not available. Nevertheless, the domestic use of electricity is increasing at a rapid rate and now averages 3,515 kilowatt hours per year per residential customer. The company's electric load is continuing to increase at a rate of approximately 8 per cent per year compounded, which compares favorably with the national average. In the area served, climatic conditions have not led to the widespread use of domestic air conditioning or electric house heating. It is anticipated, however, that a certain amount of this business will develop in the future but not with the rapidity experienced in the warmer areas of the country.



COLUMBUS AND SOUTHERN OHIO ELECTRIC COMPANY

SERVING OHIO'S MOST PROGRESSIVE AREA

New England Electric System

Boston, Massachusetts

IRWIN L. MOORE, *Chairman*

CURRENTLY the New England area is busy, prosperous, growing and challenging.

In the 4,750 square miles served by New England Electric live 2,623,000 people engaged in almost every conceivable activity. Shipbuilding, soap manufacture, machine tools, jewelry, steel and copper wire drawing and sheet mills, oil refineries, chemicals, plastics, processing machinery, electric turbines, marine gears, fine textiles, shoe manufacture, textile and shoe machinery, grinding and abrasive machines and products, fine paper, automobile and airplane parts, valves, gauges, meters and controls, electronics and nucleonics machinery, equipment and products, and growing research and development are just a few of the widely varied activities that keep these people busy and productive. Moreover, periods of depression or slow growth in one line seem to be more than offset by activity in another.

Since World War II we have seen further development of the principle of diversification and upgrading of industry centered around two points of focus: the first, the development of plants for new industries along the superhighways of New England, and the second, urban redevelopment, both of which have given a new look to our industrial and economic face.

The role of the superhighways in industrial development is well illustrated by the case of Route 128 which rims greater Boston in a 180 degree arc. It has been called everything from "the golden semicircle" to "electronic gulch" and has proved a magnet for industry.

Fortunately, this newest symbol of progress doesn't stop with Route 128. Now in the advanced planning stage (actually some links are under construction) is the new superhighway, Route 495, with many of the characteristics of 128 and all of its potentials. Like its sister route it will run in a semicircle with Boston as the hub connecting with radial highways to the North, South and West, opening up new industrial and commerical opportunities all along the way. Most significant to New England Electric, this new road runs through our service area for practically its entire length. The development and growth possibilities for these communities, if the 128 growth experience can be taken as a criterion, are virtually unlimited.

Another evidence of the life and vigor of our New England community which should not be overlooked is the activity in urban renewal. The cities and towns throughout the region are on the move to cement for themselves their natural role as shopping and commercial centers for bigger areas as industry spreads out on the superhighways.

Also encouraging is the growth of industrial employment in our service area. Since 1955 we have had a net "in-migration" of 150 new industrial firms with an estimated net increase of almost 5,000 new jobs. Our net loss in textile industries has been more than offset by an increase of some 8,500 jobs in electronics and some 1,300 jobs in plastics, not to mention further increases in both durable and non-durable classifications. Although many of these firms start small, they grow. During these last five years the demand of commercial and industrial customers has shown a net gain of 350,000 kilowatts.

During the last decade the population of New England has increased by 6.8 per cent and employment in non-agricultural establishments has increased by 5.9 These rates of growth were lower than for the United States as a whole, but New England still leads the nation with 40 per cent of its non-agricultural work force employed in manufacturing establishments as compared with 31 per cent for the entire country. The thousands of people employed in research and development work are not classified as manufacturing workers even though they produce our most important products—new ideas, new processes and new machinery. Wages and salaries in this category are much higher, of course, than in manufacturing plants generally.

One final word about New England economics. At the end of 1958 it was estimated that the per capita liquid savings of New Englanders were 42 per cent higher than for the country as a whole. Per capita personal income rose from 9 per cent above the national average in 1950 to 14 per cent above in 1958.

This is a dynamic and growing economy, a fact that we are pointing out to the rest of the country in our series of New England Electric advertisements.

(*Continued on page* 86)

There is a DROPOSITORY

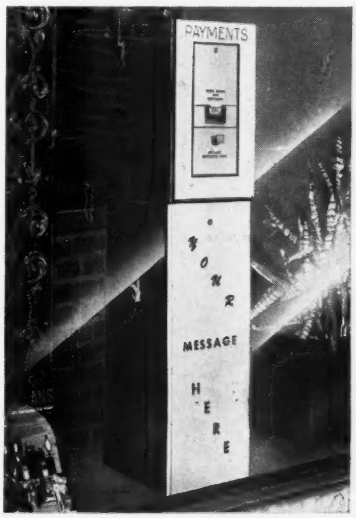
Specifically Suited to YOUR Needs!

COMPLETE Self-Service EQUIPMENT for PAYMENTS or DEPOSITS "AFTER HOURS"

Used by Public Utility Companies all over the World

PAYMENT COUNTER

For use by Collecting Agents such as Retail Stores, Banks, etc.



Economical PLATE GLASS Installation (may be installed in Walls)

Mosler DROPOSITORY

Telephone: (Kansas City Exchange) SOuth 1-8911

New Orleans Public Service Inc.

New Orleans, Louisiana

GERALD L. ANDRUS, *President*

MUCH progress was made in 1959 in a program to expand and improve facilities for serving steadily increasing customer needs, according to Mr. Andrus in his company's annual report. Orders were placed for major items of equipment for a second generating unit at the Michoud steam-electric generating station. Scheduled for operation in the spring of 1963, this unit is expected to have a capability of approximately 230,000 kilowatts, and is estimated to cost over $24 million. Michoud station presently has generating capability of 120,000 kilowatts.

Operating revenues for 1959 increased 3.7 per cent to $53,679,755 primarily for added sales for electric service. Electric revenue amounted to $33,320,710, a 5.3 per cent rise with sales in all general business classifications being up.

Electronic data processing equipment is scheduled to be installed in early 1961. This system will effect almost complete mechanization of the principal customer and general accounting functions.

Southwest Atomic Energy Associates, the 15-company group with which the Middle South companies, including Public Service, are affiliated, made substantial progress during the year on its research program toward the development of an atomic reactor of advanced design. Highlights include the design by Atomics International, a division of North American Aviation, Inc., of a facility for conducting critical experiments; notification by the Atomic Energy Commission of its intent to issue a construction permit for this facility; and receipt of a definite commitment for AEC to make available the minimum quantity of special nuclear fuel required for the research project.

Niagara Mohawk Power Corporation

Syracuse, New York

EARLE J. MACHOLD, *President*

NIAGARA Mohawk is launched on a new phase of its expansion program in which the major emphasis will be on transmission and marketing of large amounts of power. Until now, the largest part of the company's capital expenditures in the postwar era have been on new generating facilities. Now, Niagara Mohawk is underway with a program that will encompass the following projects in the next two years:

The company will complete its section of a new 345,000 volt transmission grid that will extend across New York state from Niagara Falls to New York city and total 645 circuit miles. Sections of this grid are to be built by the Power Authority of the State of New York, Niagara Mohawk and Consolidated Edison Company of New York.

Through this grid, plus other extensive existing facilities, the Niagara Mohawk system will be interconnected with the Niagara River Power Project as well as with the St. Lawrence River Power Project.

A further objective of the company's new construction program is to increase greatly the interchange capacity between Niagara Mohawk system and adjoining utilities for the purpose of achieving maximum economy in generation and transmission.

As to the first phase of the program, our linkage to the Niagara project, extensive transmission and substation facilities have already been completed in the Buffalo-Niagara Falls area. The next step will be construction of a large substation near Syracuse, the geographical center of the state, and enlargement of our Porter substation at Utica. These two substations will be connected to the section of 345,000-volt cross-state grid to be constructed by the Power Authority.

Niagara Mohawk's station at Utica will be the terminus of the Power Authority's line from Niagara as it is now the terminus of Niagara Mohawk lines connecting our system with the St. Lawrence project. Thus, through this station, the two hydroelectric projects will be interconnected.

From this key point at Utica, Niagara Mohawk will build two 345,000-volt circuits eastward to Albany and down the Hudson river as far as Poughkeepsie. From there, Con Edison will construct two 345,000 volt circuits as its portion of the grid to connect with its system at Yonkers.

The new interconnections between the Niagara Mohawk and Consolidated Edison systems, working in parallel with existing transmission lines interconnecting their systems will make possible the exchange of four times as much power between them as can be handled over existing facilities. Niagara Mohawk is scheduled to start delivering 250,000 kilowatts of firm power to Consolidated Edison by July 1, 1962, to supply Con Edison's peak loads which are at a maximum in the summer months. Later Con Edison will be able to deliver large blocks of power to Niagara Mohawk in winter months when it has generating capacity to spare and Niagara Mohawk's loads are at a maximum.

A new 230,000-volt line from Niagara Mohawk's 230,000-volt transmission system will also be constructed eastward from Albany to provide a greater exchange of power between Niagara Mohawk and New England power companies than can be handled by the existing inter-system transmission ties between these companies.

The overall program will establish a new era in the large-scale transmission and exchange of power in New York state. It keeps pace with the increased power resources within the state and growing customer use, and will be of benefit to all power consumers.

Northern States Power Company

Minneapolis, Minnesota

ALLEN S. KING, *President*

LAST year was a very successful year for Northern States Power Company. Operating revenues went over $170 million, registering an increase for the 26th consecutive year. Earnings rose to $1.41 per share on the 15,212,757 shares outstanding at December 31, 1959 compared to $1.30 per share on 14,280,489 shares outstanding at December 31, 1958.

The outlook for 1960 is one of optimism. Revenues are expected to

reach $184 million, and earnings are estimated at about $1.50 per share.

The company expects further increases in the use of electricity in the home, on the farm, in business, and in industry. The "Live Better Electrically" program and promotion of the "Medallion home" are creating tremendous interest on the part of builders and the public in the all-electric home as they realize the benefits of "all electric living." At the present time there are over 200 homes on the company lines that are heated electrically, and many more are expected to be added during the year.

In 1959, the company completed installation of the largest unit on its system, a turbo generator of 175,000 kilowatts capability in its High Bridge plant in St. Paul. A second unit of the same rating, under construction at its Black Dog plant near Minneapolis is scheduled to go into service early in the fall of 1960. Construction is also under way on the company's 66,000-kilowatt Pathfinder atomic plant to be located a few miles northeast of Sioux Falls, South Dakota. This plant is scheduled to be completed in 1962.

Construction expenditures totaled $45,200,000 in 1959. Expenditures are estimated at $56 million for 1960, $43 million for 1961, $42 million for 1962, and $60 million for 1963, for a total of $201 million in the four-year period. To finance its 1960 construction program, the company expects to issue $35 million of first mortgage bonds in December 1960. A bond issue is also contemplated for 1961.

Ohio Edison Company

Akron, Ohio

W. H. SAMMIS, *President*

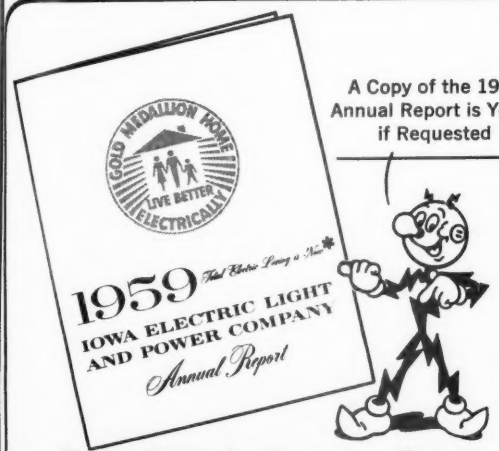
THE business recovery that started in mid-1958 gained such momentum in the area served by the Ohio Edison System during the first half of 1959 and subsequent to the settlement of the steel strike that the year ended with a number of new operating records for the system, according to the company's annual report.

Ohio Edison Company's operating revenue for 1959 amounted to $132,921,060, and Pennsylvania Power Company's $18,879,549. After intercompany eliminations, the consolidated total was $150,797,804, an increase of 9.6 per cent over 1958, and an all-time high for the system. More than 98 per cent of this total revenue was from electric operations and the remainder from the sale of steam in three communities and from miscellaneous revenue.

The high plane on which the year ended also marked an appropriate end to a decade in which both the companies and the area served experienced remarkable growth. The last half of the 50's brought with it the greatest expansion of industry in the area's history. New industrial plants and additions announced in the past five years involved expenditures of an estimated $709 million for construction and equipment and the creation of many thousands of new jobs in the area. Of more direct significance is the increase of 172,257 in the number of customers over the ten-year period.

New uses of electricity, expanding

(*Continued on page* 88)



A Copy of the 1959 Annual Report is Yours if Requested

Total Electric Program Paces Another Year of Growth & Progress

● Always going forward — never turning back — each year of our program has continuously pointed the way to better electric living, truly *modern* progress.

We are proud of our record of the past but confidently anticipate surpassing it in future achievements. May we show you our 1959 Report — which portrays our plans for the future?

77 Years of Serving the Heartland of a Great State

IOWA ELECTRIC LIGHT AND POWER Company

An Iowa Corporation

WORLD MARKET for CONNECTICUT PRODUCTS

In the Areas served by the Hartford Electric Light Company . . . metropolitan Hartford, Middletown, New London, Stamford and Torrington . . . myriad industries find employees, markets, resources and prosperity.

Annual Report on request

THE HARTFORD ELECTRIC LIGHT COMPANY

176 Cumberland Avenue, Wethersfield Conn.

population and the general economic health of the area have contributed to the outstanding progress realized in the past ten years. This growth is reflected in the extensive construction programs of the companies for expansion and improvement of their properties during that time. Since 1949, they have expended $482,880,000 for these purposes, including $56,119,300 in 1959. For 1960 such expenditures are estimated at $59,247,000 (Ohio Edison Company, $55,531,000; Pennsylvania Power Company, $3,716,000).

Oklahoma Gas and Electric Company

Oklahoma City, Oklahoma

DONALD S. KENNEDY, *Chairman and President*

OKLAHOMA Gas and Electric Company supplies electric service to approximately 1,100,000 population in a 30,000 square mile area in Oklahoma and western Arkansas. Historically, the economy of the area has been dominated by agricultural and oil production, but the steady growth of industry during recent years has provided the necessary diversity for a better balanced economy.

Many new major industries have moved into our service area within recent years and many established industries have expanded their facilities. These include such well-known companies as Western Electric, Borg-Warner, Ohio Rubber, Dixie Cup, Continental Can, Blue Bell Clothing, Ideal Cement, Sylvania, Fansteel Metallurgical, Callery Chemical, Pillsbury Mills, U. S. Gypsum, Container Corporation, Brockway Glass, and Corning Glass. The prospects for continuing industrial expansion look very promising.

Our own revenues have grown at a compound rate of about 10 per cent per year over the past decade, which is a doubling in eight years. This reflects the general growth pattern of the area. Our generating plant facilities have been increased from 240,000 kilowatts in 1949 to 1,138,000 kilowatts in 1959. We added a single generating unit of 240,000 in 1959, which was equivalent to our total capacity ten years earlier. Forecasts indicate we will need additional capacity by 1963. No financing was required during 1959 and none is planned for 1960.

My confidence in the future of the region is best reflected in a recent official report for the United States Senate Select Committee on National Water Resources, submitted to Senator Robert S. Kerr, chairman, on January 14, 1960. This report shows that Region V, which is comprised of the southwestern states of Texas, Oklahoma, Louisiana, Arkansas, Kansas, most of New Mexico and parts of Missouri and Mississippi, is probably the fastest growing region of the United States as far as the electric utility industry is concerned. The peak loads of the investor-owned companies in this region are expected to increase almost three-fold by 1970 and more than six-fold by 1980. The report further shows that the investor-owned system loads in Region V will be tied for first place in the nation by 1980.

Growing with . . .
OKLAHOMA
Our net generating capacity has increased in the past 10 years from 241,000 kw to 1,138,000 kw . . . an increase of 371%.
A new 240,000 kw steam turbo generator was placed in operation at our Mustang Station, 10 miles west of Oklahoma City in June, 1959.
We are meeting all service demands and have an adequate reserve supply.
A copy of our 1959 Annual Report is yours on request.
OKLAHOMA GAS AND ELECTRIC COMPANY
321 North Harvey, Oklahoma City, Oklahoma
Donald S. Kennedy, President

Otter Tail Power Company

Fergus Falls, Minnesota

CYRUS G. WRIGHT, *President*

THE future of the Upper Midwest is almost unlimited. The progressive spirit of its citizens has brought about an extended period of development that may well be only in its infancy. New industry is moving in at an accelerated rate, and present industry is expanding to bulwark and add diversification to the region's basic agricultural economy. For Otter Tail Power Company, the immediate expectation of adding several industrial electric loads each from two to five times as large as that of the company's present largest industrial customer is a measure of the speed of the growth now taking place in its service area.

The picture of growth and development in the Upper Midwest may contrast with the impressions of people unfamiliar with this segment of the United States, many of whom still think that the region contains nothing but vast prairies, crossroads towns and country elevators. The belief that the Upper Midwest has somehow remained isolated from the modern world persists in other parts of the nation despite the rapid change that has taken place in recent years.

It would come as a surprise to some that the prairies have long since given way to highly-productive, mechanized farms, concrete highways and urban development, that the crossroads towns have become aggressive, up-to-date communities successfully competing for commerce and industry and that the country elevators are fast being joined by food processing plants of almost every description. Yet, this is the true 1960 picture in eastern North Dakota, northeastern South Dakota and northwestern and west central Minnesota, the area receiving electric service from Otter Tail Power Company.

In 1960, Otter Tail stands on the threshold of the greatest expansion period in its history. Its service territory is on the move toward realization of its full potential in agriculture, commerce and industry.

And, as it has for over half a century, Otter Tail Power Company welcomes the opportunity of providing the much larger amounts of electric power that will be needed each year for an ever greater variety of farm, home, business and industrial use.

Pacific Gas and Electric Company

San Francisco, California

NORMAN R. SUTHERLAND, *President*

GROWTH continues in the service area of Pacific Gas and Electric Company at a pace which confirms the estimate of 1960 as an exceptionally favorable year for business generally.

A system peak of over four and one-half million kilowatts established in August, 1959, is expected to be substantially exceeded and may reach 4.9 million kilowatts this year. We expect to connect about 56,000 new electric customers to our lines. During the first quarter a total of 18,795 new single family homes was connected, an increase of 15.9 per cent over the same period last year. Multi-family or apartment units were up 68 per cent over the first quarter of 1959. Migration into California from elsewhere will provide more than half of the anticipated new domestic customers.

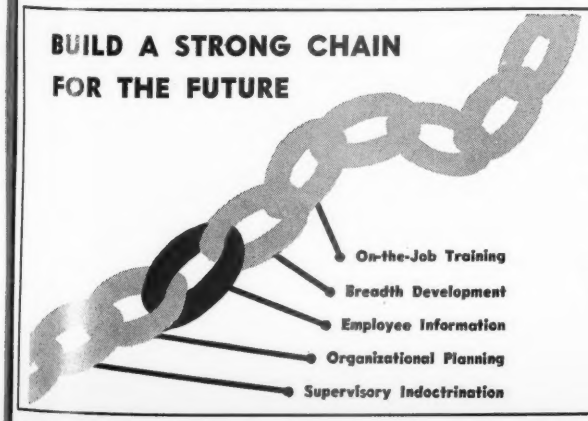
California is undergoing a second consecutive year of below-normal precipitation, which will increase the amount of irrigation pumping. Our advance planning in the management of our storage reservoirs will minimize the effect of the drought on power production. We estimate that hydroelectric production will be about 85 to 90 per cent of that for an average water year.

The first 325,000-kilowatt unit on the PG&E system will be in service at Pittsburg power plant to help serve this year's anticipated peak load. This unit and the 12,500-kilowatt Geysers power plant, utilizing geothermal steam developed at The Geysers in Sonoma county, will increase the company's generating capacity to 5,603,000 kilowatt.

A second 325,000-kilowatt unit is under construction at Pittsburg for service in 1961 and will increase that plant to 1,310,000 kilowatt capacity. We have now added to our schedule a third 325,000-kilowatt unit to be installed at Morrow Bay power plant for service in the winter of 1962-63. Only six years ago the standard of size for increments of conventional thermal power on the PG&E system became 165,000 kilowatts when the first four units of that size were placed in service at Pittsburg.

In the field of nuclear power de-

(*Continued on page* 90)



Well rounded management personnel are needed to lead the utility industry steadily forward. The P. U. R. Guide was created to fill the need for a strong link in understanding the non-technical aspects of utility operations. Join over 240 other gas, electric, telephone and water utilities which have enrolled in this program.

THE P.U.R. GUIDE

Public Utilities Reports, Inc.

332 Pennsylvania Bldg., Washington, D. C.

velopment we have determined to proceed with additional tests on the pressure suppression concept of reactor containment design which we have proposed to the Atomic Energy Commission for the 60,000-kilowatt Humboldt Bay atomic power plant. These tests are in progress at Moss Landing power plant on Monterey Bay. We expect that they can be completed and evaluated in time for formal presentation to the Commission in late summer. We are optimistic that they will demonstrate conclusively to the Commission the value of the proposed design.

The rapid growth of population makes the development of additional water resources a matter of continuing importance in California. Pacific Gas and Electric Company is actively participating in water development by co-operating with public agencies in the marketing of their by-product power. We have signed a 50-year contract with the Oroville-Wyandotte Irrigation District under which the company's power purchases are expected to make possible a $62 million project of the District on the South Fork Feather river with a total capacity of 86,500 kilowatts and water storage of 163,000 acre feet. This is the most recent of numerous such partnerships in which we have engaged during a period of more than thirty years. We expect this pattern of co-operative water development to increase in the present decade along with development of additional hydroelectric capacity in company plants. Work is proceeding at present on the 42,000-kilowatt Kings river development which in 1962 will complete the company's Kings river project begun in 1955. We are preparing to replace two old hydroelectric plants, the Stanislaus and DeSabla powerhouses, with larger new plants. The increase in capacity for the two will amount to about 45,000 kilowatts.

The Savings Fund Plan for employees which the company inaugurated last year has been enthusiastically received by them and 85 per cent of the more than 13,000 employees eligible are now participating. Of these, 95 per cent elected to apply their contributions to the purchase of company common stock. The remainder chose either United States savings bonds or a combination of bonds and stock. The great majority elected to make the maximum contribution for which they were eligible. Company contributions, all of which are invested in stock, supplement those of the employees.

Pacific Power & Light Company

Portland, Oregon

D. R. McCLUNG, *President*

CONTINUED economic growth of the areas in five states of the northwest which are served by Pacific Power & Light Company, characterized the progress of the company during 1959.

Gross operating revenues of $57,761,000 represented an increase of 9.2 per cent over the year previous. Sales to general business customers increased 11.4 per cent and the average annual use of electricity by residential customers increased 624 kilowatt-hours to reach a new high of 7,621 kilowatt-hours. System peak load was 1,001,000 kilowatts compared with 892,000 the year previous.

Merger of Rawlins, Wyo., Electric Company into PP&L in June added 3,300 customers to the system and helped increase the number of electric customers to a total of 289,511, or 5,480 more than a year ago.

Construction of a second 100,000-kilowatt steam-electric unit at the Dave Johnston plant near Casper, Wyo., was begun in May along side of the first unit dedicated eight months earlier. Scheduled for completion late in 1960, the No. 2 unit will increase the generating capacity of Wyoming by 24 per cent.

The 1960 system construction program is expected to require approximately $33.7 million, of which almost two-thirds will be for normal expansions of distribution service facilities.

The company currently has pending before the Federal Power Commission applications for licenses to build a fourth and fifth hydroelectric project on the Lewis river of Washington and for hydro project on the Coquille river in Oregon. In addition, PP&L is a partner in Pacific Northwest Power Company, which proposes to build the 1,750,000-kilowatt high mountain sheep project on the Snake river between Oregon and Idaho; is investigating sub-bituminous coal fields in both Washington and Oregon, and also is a co-sponsor of the research and development work of High Temperature Reactor Development Associates, Inc. and the Rocky Mountain Pacific nuclear study group.

Recognizing the increased significance of research affecting utility operations and the prospects for expansion of the industrial economies of its territory, the company organized a separate research department to consolidate and expand its activities in these fields. The research objectives parallel other department functions for improvement of services, reduction of production and operating costs, development of new markets and uses for electricity, investigation of new power supply resources and methods of energy production and the conservation of natural resources and beneficial utilization of industrial raw material.

Pennsylvania Power & Light Company

Allentown, Pennsylvania

CHARLES E. OAKES, *Chairman of the Board*

ON June 4, 1960, Pennsylvania Power & Light Company reached another corporate milestone with the celebration of its fortieth year of existence.

In 1920, PP&L served 78,132 customers and a total population of 688,000 in a service area of 2,800 square miles and had 1,079 shareowners. At the end of 1959, the company served 718,714 customers and a total population of over 2 million in a service area of over 10,000 square miles and had 96,163 shareowners. The last is a specially interesting fact, there being many more owners today than customers when the company was formed.

From the merger of a number of small electric and gas utilities in Central Eastern Pennsylvania, PP&L has grown to become one of the major electric utility companies in the nation.

The service area includes 29 counties of Central Eastern Pennsylvania and is generally referred to as the "Heart of the Market" because of its substantial and diversified industry, sound agricultural base and

proximity to major metropolitan areas. Aside from abundant natural resources, the area is endowed with man-made resources. Transportation and recreation facilities are excellent and there are 15 colleges and universities in or immediately adjacent to the service area.

These advantages have been an important factor in stimulating the expansion and attraction of industry. The company maintains an integrated program of industrial development and furnishes potential new industry with detailed information on area advantages, sites, buildings and communities.

The company continually strives to contribute to service area progress and prosperity. In 1959, PP&L returned a substantial $72.5 million to the local economy in the form of payrolls, dividends to local shareowners, state and local taxes and purchases of materials, supplies, equipment and services, whenever practical, from local firms or firms represented by local people.

In 1959, the maximum one-hour use of electricity on the system reached a new peak of 1,374,000 kilowatts. Sales of electrical energy were up 6.8 per cent, reaching 6,333 million kilowatt-hours and operating revenues rose to $138.4 million, an increase of $7.3 million over 1958.

The company feels that increased sales to residential, commercial and industrial customers has been largely the result of effective and aggressive promotion. Typical promotions in 1959 included educational clinics on various applications of electric heating in manufacturing and processing; presentations of cooking, lighting and related equipment at restaurant association meetings and equipment shows; twelve-week courses which informed electrical contractors, lighting consultants, home builders and other related groups on how to plan, sell, deliver, and install effective and attractive home lighting. The company intends to continue this type of promotional activity in 1960 and will again emphasize active electric home heating promotion.

The company will continue its program of expansion and reinforcement of facilities. Estimated construction expenditures for 1960 are $35 million. Construction expenditures from 1955-59 were $144 million and estimated expenditures for the five-year period from 1960-64 total $160 million or an average of $32 million per year.

The new steam-electric station underway at Brunner Island, 15 miles below Harrisburg on the Susquehanna river, is scheduled to go in service in early 1961. This 300,000-kilowatt unit of the semi-outdoor type will utilize a cross-compound turbine generator, first of this type on the PP&L system.

An interesting innovation in 1959 was the negotiation of a contract for helicopter patrol of the company's widespread transmission system. This service has proved extremely valuable during emergency situations and will eliminate thousands of miles of time-consuming and costly foot patrol.

In 1960, PP&L will continue to emphasize increasing sales volume and cost control.

(*Continued on page 92*)

This advertisement is neither an offer to sell nor a solicitation of offers to buy any of these securities. The offering is made only by the Prospectus.

NEW ISSUE

May 25, 1960

333,400 Shares

Arizona Public Service Company

Common Stock

$5 Par Value

Holders of the Company's outstanding Common Stock are being offered rights to subscribe at $36.50 per share for the above shares at the rate of one share for each ten shares of Common Stock held of record on May 24, 1960. Subscription Warrants will expire at 3:30 P.M., Eastern Daylight Saving Time, on June 14, 1960.

The several Underwriters have agreed, subject to certain conditions, to purchase any unsubscribed shares and, both during and following the subscription period, may offer shares of Common Stock as set forth in the Prospectus.

Copies of the Prospectus may be obtained from any of the several underwriters only in States in which such underwriters are qualified to act as dealers in securities and in which the Prospectus may legally be distributed.

The First Boston Corporation		Blyth & Co., Inc.
Merrill Lynch, Pierce, Fenner & Smith Incorporated	Refsnes, Ely, Beck & Co.	William R. Staats & Co.
Stone & Webster Securities Corporation	White, Weld & Co.	Dean Witter & Co.
A. C. Allyn and Company Incorporated	Hemphill, Noyes & Co.	Paine, Webber, Jackson & Curtis
Coffin & Burr Incorporated	Lester, Ryons & Co.	Schwabacher & Co.
Ball, Burge & Kraus		
A. G. Edwards & Sons	Elworthy & Co.	Hill Richards & Co.
J. A. Hogle & Co.		
Newhard, Cook & Co.	Shuman, Agnew & Co.	Wagenseller & Durst, Inc.
Walston & Co., Inc.	Bateman, Eichler & Co.	Bosworth, Sullivan & Company, Inc.
Crowell, Weedon & Co.	Davis, Skaggs & Co.	Estabrook & Co.
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First Southwest Company	Goodbody & Co.	E. F. Hutton & Company
Irving Lundborg & Co.	McCormick & Co.	The Milwaukee Company
Pasadena Corporation		
Smith, Moore & Co.	Stroud & Company Incorporated	Sutro & Co.
Brush, Slocumb & Co. Inc.		
Grimm & Co.	Hooker & Fay Incorporated	Jones, Kreeger & Co.
Laird & Company, Corporation		
Pacific Northwest Company		

Portland General Electric Company

Portland, Oregon

THOMAS W. DELZELL, *Chairman of the Board*

PORTLAND General Electric Company, Oregon's pioneer utility, closed out its seventieth year of operation serving more customers more electricity than ever before.

In order to meet demands of a year which saw PGE surpass 250,000 customers, the utility expended nearly $13 million in general line and distribution construction. The 1960 construction budget, for the same purposes, is expected to run $11,608,850.

Not included in the 1960 figures, however, are any monies which might be spent should PGE get early approval from the Federal Power Commission on the proposed $71 million Round Butte dam on the Deschutes river. The application has received the unanimous approval of the Oregon State Water Resources Board and is now being considered by the FPC. On December 22, 1959, the Oregon State Hydroelectric commission issued a preliminary permit for the project. Construction of Round Butte will start as soon after licensing as detailed plans can be prepared and job contracts awarded. By undertaking this immense project, the company again demonstrates its faith in the future of Oregon. Round Butte will help provide the power requirements of customers, present and future.

PGE's power resource position improved considerably during 1959 when the utility announced purchase of another large block of electric power from public agency dams on the Columbia river in Washington. PGE has now contracted for 583,046 kilowatts from Priest Rapids, Wanapum and Rocky Reach projects on the Columbia.

During 1959 the utility also recorded all-time highs in the use of electricity.

On November 16th, PGE's net system peak load reached 907,000 kilowatts, which was 62,000 kilowatts higher than the previous peak reached January 5, 1959. During the same 24 hours, the system used 16,213,000 kilowatt-hours of energy.

Average annual residential use on the PGE system was one of the highest in the nation for 1959. The average home customer used 9,111 kilowatt-hours of electricity, or nearly double what he used a decade ago. The national average per residence is 3,550 kilowatt-hours per annum. For comparison, the average family in Russia uses only 400 kilowatt-hours a year.

Public Service Company of Colorado

Denver, Colorado

R. T. PERSON, *President*

COLORFUL Colorado, with its moderate climate, scenic grandeur and year-'round recreational opportunities, has become a population magnet since World War II. Colorado's population increased from 1,173,000 in 1945 to an estimated 1,773,000 today. Denver, capital city and headquarters for Public Service Company of Colorado, and its metropolitan area has grown from approximately 450,000 to 885,000 in the same length of time and continues to grow today at the rate of 2,700 persons per month.

In addition to the increasing number of permanent residents, the state plays host to hundreds of thousands of tourists each year who come to Colorado to partake of the state's many attractions. Staying ahead of the economic boom has necessitated tremendous expansion of the company's facilities.

In the past ten years, PSCo has spent $261,136,000 for new facilities —$185,359,000 for electric, $64,368,000 for natural gas, and $11,409,000 for common and general plant. In that time, gross generating capability has been increased from 248,200 to 888,350 kilowatts, and electric customers have increased from 202,372 to 330,779.

Construction costs for electric generation, transmission and distribution facilities accounted for $21.4 million of the company's $32 million construction program in 1959. In the next five years, (1960-1964), PSCo will spend an estimated $207 million to meet its construction requirements with approximately $135 million to be spent on electric facilities.

Within the past year, 154,000 kilowatts of generating capacity were added by the company. Cherokee station, north of Denver, placed a 110,000-kilowatt unit on the line about mid 1959, and Cameo station, near Grand Junction, Colorado, added a 44,000-kilowatt unit which went on the line in April of this year.

Cameo station, a mine mouth plant, has a capacity of 66,000 kilowatts and receives its fuel directly from a coal mine over which it is located. This station's power is distributed on the company's western fringe, which is also tied into the central system by a transmission line built over the Continental Divide.

Construction started in May of this year on a 150,000-kilowatt third unit at Cherokee station, which when completed in 1962, will bring this station's capacity to 360,000 kilowatts and the company's generating capability to over one million kilowatts.

The company has nine steam-electric generating stations in its system and six hydro stations, with hydro generation accounting for about 5 per cent of the total input to the electric system.

PSCo, together with several manufacturing companies, has been conducting experiments in electric transmission with extra-high voltages at high altitude. The company's test transmission line is at Leadville, Colorado, 10,500 feet above sea level where tests with voltages ranging from 300,000 to 500,000 volts are nearing completion.

This research has proved conclusively that extra-high voltages can be carried on conductors of smaller diameter than heretofore believed at high altitudes with minimum corona loss and radio interference.

The company will start construction this summer on a new 115/235-kilovolt transmission line, which will incorporate much of the knowledge obtained from the Leadville tests. The first 16 miles of the line, which varies from 5,900 to 8,625 feet above sea level, will be built at a saving of 26 per cent on the cost of conductor as a result of the company's tests at Leadville.

Although Colorado abounds in coal, oil, and gas reserves, available at relatively low cost, PSCo has been actively engaged in the study, research, and development of nuclear power generation through the Rocky

Mountain Nuclear Power Study Group, the Rocky Mountain-Pacific Nuclear Research Group, and High Temperature Reactor Development Associates.

While the population of the United States is expected to increase approximately 15 per cent by 1970, Colorado is anticipating a 27 per cent growth. Metropolitan Denver is expected to increase 29 per cent during this same period. Such growth, the result of shifting U.S. population looking for more enjoyable climates in which to live and work, and the location of new and expanding industrial activities in the company's service territory, will continue to challenge Public Service Company of Colorado. This is a challenge we look forward to with great anticipation.

Public Service Electric and Gas Company

Newark, New Jersey

DONALD C. LUCE, *President*

NEW records were established in 1959 for sales, revenues, demand, and output of both electricity and gas. The year's records were impressive, but of particular significance is the steady rate of growth of the company's business over the years. In the decade of the '50's, kilowatt-hour sales of electricity increased from 5.1 billion to 11.6 billion, or at the rate of 8.57 per cent per year while sales of gas grew from 220 million therms to 766 million therms in the ten-year period, or at the rate of 13.30 per cent per year. Our forecasts for the coming decade indicate that the demand on our electric and gas systems will probably double.

Additions and improvements to utility plant necessary to keep pace with the continually increasing demands for the company's electric and gas services have required the expenditure of almost a billion dollars in the past decade. Our current construction program as of January 1, 1960, amounted to $295 million, of which it is expected that between $140 million and $150 million will be spent in 1960. This will mark the fifth consecutive year the company's construction expenditures have exceeded $100 million and will bring to more than a billion dollars the amount expended since 1951 for additions and improvements to plant and equipment.

Work is progressing on three major additions to the company's generating facilities. The Bergen station in Ridgefield, New Jersey, estimated to cost nearly $110 million, already has one 290,000-kilowatt turbine generator in operation and the second unit of similar capacity will be placed on the line within the next few weeks. The Mercer station, located on the Delaware river near Trenton, will cost approximately $130 million. The first of two 320,000-kilowatt turbine generators is expected to be placed in operation later this year and the second, of similar capacity, in 1961. At the existing Sewaren generating station, near Perth Amboy, a fifth turbine generator is being installed. This 342,000-kilowatt unit, to cost more than $66 million and scheduled for service in 1962, will raise the station's capacity to 817,000 kilowatts, largest in the company's

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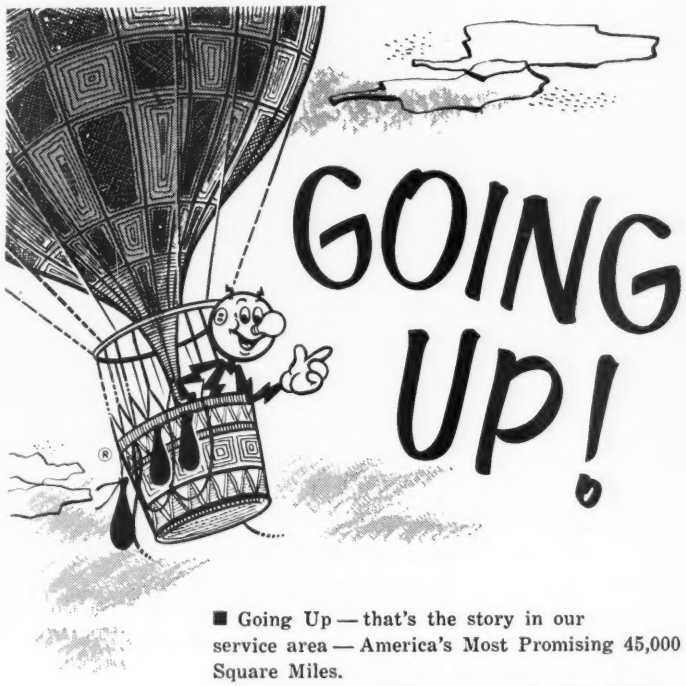

■ Going Up — that's the story in our service area — America's Most Promising 45,000 Square Miles.

1959 building permits were nearly 30% higher than 1958 — the previous high.

Winter rains and snow have provided precipitation which makes the farm and ranch outlook brighter than it has been for 16 years.

The 1960 census should show a population increase of about 60% for the decade.

Going up — that's the story of the area — and the electric company that serves it.

SOUTHWESTERN
PUBLIC SERVICE
COMPANY

SERVING AMERICA'S MOST PROMISING 45,000 SQUARE MILES

system. The capacity of this station, alone, will then exceed the capacity of the entire Public Service system at the beginning of 1940. Upon completion of these new facilities and after retirement of some older generating units at Marion station, the company's total installed capacity will be 4,054,500 kilowatts, an increase of almost 60 per cent over the capacity on January 1, 1959.

Construction and reinforcement of major high-tension transmission lines and switching facilities, at a cost of almost $40 million, is under way or planned in order to insure the most effective use of the company's immense generating facilities and to maintain high standards of reliability of service. Two new switching stations are scheduled for service in 1960, and another for service in 1961. Placed in operation recently is the $6 million Newark switching station, with an ultimate capacity of 330,000 kilovolt-amperes, which is the first switching station built by the company in the central business district of a major city.

In addition, the company will expand its distribution facilities during 1960 with the installation of 22,000 new electric meters, 2,000 miles of overhead and underground wire, 5,000 additional distribution transformers, 5,000 new street lights, and 8,500 additional poles.

Continuing the company's plan to serve straight natural gas in certain areas of its territory, the appliances of approximately 145,000 customers were converted in 1959, bringing the total number of customers using straight natural gas to over 514,000, and 42,000 additional customers will have their appliances converted in 1960. By the end of 1960 nearly one-half of all customers in the company's gas service area will be supplied with straight natural gas.

Almost 32,000 gas heating customers were added during 1959, bringing the total number to approximately 278,000, and it is anticipated that 29,000 additional heating customers will be added by the end of 1960. The company will then be serving more than 300,000 heating customers. Plans for gas facilities to meet the increased demands of present customers and to provide service to the expected additional heating customers include the installation of approximately 285 miles of gas mains, 22,000 services, and 27,000 meters during 1960.

Because of the importance of having new industries locate in our territory, we have expanded our program of promoting the many advantages of the area served. Located at the Crossroads of the East, New Jersey is in a most favorable position with respect to domestic and foreign markets, and I am enthusiastic about the prospects for continuing growth of the economy of the state and of the business of the company.

Puget Sound Power & Light Company

Seattle, Washington

J. H. CLAWSON, *President*

PUGET Sound Power & Light Company is experiencing continued growth and progress in its expanding area.

Keeping pace with this growth, the company put into operation its new 94,000-kilowatt Upper Baker river hydroelectric development last November. A 64,000-kilowatt expansion of the company's Lower Baker river development is progressing on schedule and should be ready for operation in September of this year.

On April 1st the Washington Public Service Commission authorized Puget to raise its rates about 11 per cent or $3,634,000 a year. The increase is $295,800 less than the company had requested. About $2 million of the increase will go for taxes, leaving a net increase of $1,678,037 a year.

The company arranged and financed meetings with top industrial executives in four Midwestern cities during April as part of its positive program to attract new industry to its service area. An 18-man delegation, including Governor Albert D. Rosellini, met with approximately 300 officials of leading industries in Chicago, Detroit, Cleveland and Pittsburgh to inform them of the economic advantages and opportunities for expansion of their businesses in Washington. Interest in Puget's area on the part of major industry was evidenced by the fact that attendance at the meetings ran 2 to 1 over that at similar gatherings last year in Boston, New York and Philadelphia. The Midwesterners repeatedly expressed warm appreciation for the Westerners efforts to alert them to the Puget Sound region's growing population and markets.

Power needs of the Pacific Northwest will double in the next decade according to a recently published forecast by the Bonneville Power Administration. It also predicted that average customer usage in the Bonneville area would reach 14,000 kilowatt-hours annually by 1969.

For the twelve months ended March 31, 1960, Puget's residential customers used an average of 8,804 kilowatt-hours, an increase of 667 kilowatt-hours or more than 8 per cent over the 8,137 the previous year. As of March 31, 1960, there were 147,170 residential customers on the company's "all-electric" schedule, with an average annual usage of 11,003 kilowatt-hours.

During 1960, Puget will spend about $21 million—more than $100 per customer—for construction of new facilities and equipment to keep pace with the growth in its service area.

South Carolina Electric & Gas Company

Columbia, South Carolina

S. C. MCMEEKIN, *President*

SOUTH Carolina's march of progress is being quickened through electric power availability, and our company—serving half of the state's 46 counties—is helping the area to a giant step along this road.

Accessions of new industry in the state during the past year or so have justified our firm's heavy expansion investment. We are lengthening the state's industrial strides further through (1) a three-year, $66 million construction expansion program; (2) provision of ample natural gas facilities, and (3) a make-ready for the future—co-operative research into nuclear power possibilities.

Alert to the quickening tempo of shipping at the port cities of Charleston, Georgetown and Beaufort, the company is providing for the result-

ant industrial growth in the "Low Country" area. The firm is constructing a $23.1 million steam plant at Canadys on the Edisto river. When completed in 1962, the station not only will provide further growing room for new coastal-area industry, but it will boost the firm's total generating capability to well above the million kilowatt mark.

The company and its subsidiaries have expended more than $176 million during the past ten years to provide for increased customer requirements. As of the end of 1959 the investment in utility plant amounted to about $253 million, over two-thirds of which has been constructed during the last ten years.

South Carolina's heavy gain in industrial growth is reflected through the industrial electric load experienced since 1954. At that time the demand for industrial power was 409,778,000 kilowatt-hours; by 1959 it had reached 1,000,782,000 kilowatt-hours, an increase of 144.22 per cent.

Forecasts for this year place our industrial load at 1.5 billion kilowatt-hours, and for 1965 at 2.5 billion kilowatt-hours.

The increase in the forecast for 1965 has been accelerated by the fact that several large industries have purchased tracts and expect to build large operations in the area within the next three years.

These figures are exclusive of a contract held by South Carolina Generating Company, a wholly owned subsidiary, with the Savannah river plant of the Atomic Energy Commission which purchases all its outside power from the company.

Some indication of the tremendous increase in the volume of natural gas sold can be gained from these comparisons. For the twelve months ending March, 1954, sales amounted to 931,000 Mcf. The forecast for the 1959-1960 heating season was some 12 million Mcf. Looking ahead to 1963, the company has forecast a sale of 20 million Mcf.

Our company continues its cooperative participation in nuclear power research. As a joint sponsor and member of Carolinas Virginia Nuclear Power Associates, Inc., the company expects construction to start in the summer on an atomic reactor. It will be located adjacent to our Parr steam-electric station, about 30 miles northwest of Columbia. Steam generated by the reactor will be delivered to the steam supply system of the existing plant and will activate the turbines and generators.

This will be the first construction of a nuclear plant for power purposes in the Southeast.

The market South Carolina Electric & Gas Company seeks to develop perhaps lacks palpable dimensions because of its broad and general scope. Nevertheless, an avowed goal of our firm is and will continue to be the development of South Carolina's industrial future.

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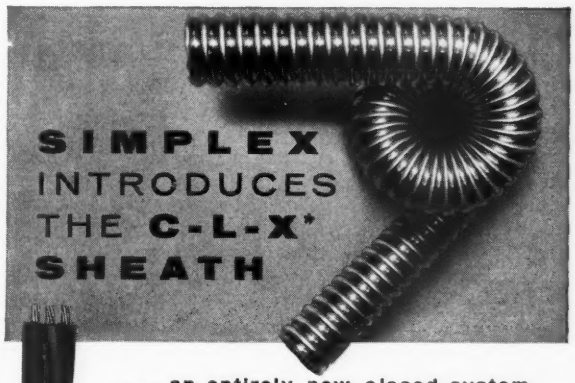

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Southern California Edison Company

Los Angeles, California

HAROLD QUINTON, *Chairman of the Board*

RECORD highs were reached by Southern California Edison Company last year in the number of customers served, kilowatt-hour sales and electrical demand.

Meter additions totaled 66,820—a gain of nearly 8,000 over 1958—the volume of kilowatt-hour sales advanced 13.5 per cent to 15,698,837,000 and peak demand climbed to 3,181,000 kilowatts, an increase of 7.4 per cent over the preceding year.

Record taxes also continued to occupy the spotlight. For the eleventh consecutive year, the various taxes paid constituted the company's largest single item of expense. They totaled $81,544,899 for the year, or the equivalent of 29 cents of every dollar of revenue. This represented a 12 per cent boost over the company's 1958 tax bill.

Aggressive sales activities resulted in a 71 per cent increase in the number of contracts signed for Medallion homes and apartments and enabled the company to lead the nation again last year in the Medallion home program. As a supplement to its domestic promotional efforts, the company also intensified its area development program of encouraging and assisting industrial firms to locate or expand their operations in Edison's service area.

The Edison Company's plant expansion program continued in 1959 with the completion of two steam-generating units at Mandalay steam station with a combined capacity of 430,000 kilowatts, and completion of the spectacular Mammoth Pool hydroelectric construction project in the Big Creek-San Joaquin river watershed development, where Edison's investment now exceeds $212 million. This latest addition to the company's hydroelectric system has a maximum capacity of 150,000 kilowatts, bringing the company's total hydroelectric capacity in the Big Creek area to 690,000 kilowatts.

Other construction work still in progress includes two additional units at the Huntington Beach steam station, each of a capacity of 215,000 kilowatts, which will bring the total capacity of that station to approximately 875,000 kilowatts in 1961.

Southern California Edison's 1960 plant budget includes commencement of construction on two 310,000-kilowatt generating units at the company's Alamitos steam station which upon completion in 1962, will bring the capacity of that station above one million kilowatts. The total construction budget for the year 1960 is estimated at $123 million.

Southwestern Electric Power Company

Shreveport, Louisiana

J. ROBERT WELSH, *President*

OUR 25,000 square mile service area, popularly known as the Ark-La-Tex area, is located in the center of a large market and contains many of the basic elements for growth, such as good climate, space for growth, abundance of natural resources, and many thriving businesses and industries. Our service area is a fast growing one, as the following figures show.

Kilowatt-hour sales increase to residential customers of 10.09 per cent in 1959 came from growth in customers, and increased usage by existing customers. The year was high-lighted by the connecting of the 200,000th customer. This new customer was but one of 6,097 customers added to our system during the year.

Through our promotional program "Operation Built-In" whereby the company offers cash allowances to home builders for the installation of certain built-in electrical appliances the following installations were made in new homes during 1959:

1,319—Minimum 100 amp service with built-in oven and surface units.

1,660—240V clothes dryer outlets.

73—4,500W quick recovery water heaters.

844—Lighting installations of 2,000W or more.

2,005—240V room air conditioner outlets.

53—Central system heat pumps.

Sales of electrical appliances through approximately 414 retail dealers broke all previous records, and sales of major domestic appliances during 1959 had an estimated dollar retail value of 7.5 per cent over the previous year. 250 Medallion homes were completed and served from our lines.

Sales to commercial and industrial customers increased rapidly, too.

Kilowatt-hour sales to commercial class customers were increased 8.61 per cent in 1959. Installation of commercial electric cooking equipment, commercial lighting, electric resistance heating, heat pumps, and a large volume of electric air conditioning contributed toward this increase.

The adding of new industrial loads and increased use by existing industrial customers provided a banner year in industrial power sales with a kilowatt-hour sales increase of 16.24 percent over the previous year. This increase was obtained even though oil field pumping was curtailed due to cutbacks in proration allowables that permitted only 123 days of pumping.

Sales programs for 1960 were further strengthened with an increase in the sales promotion budget, with strong emphasis being placed on electric heating and heat pumps. A new residential winter heating rate of 1.1 cents per kilowatt-hour, after 500 kilowatt-hours of monthly use during November through April has helped focus customer interest on electric heating.

Continuing customer growth and increased use of electricity plus a continuing industrial expansion through acquiring new industry and expansion of existing industry is anticipated for the three-state area for future years.

Southwestern Public Service Company

Amarillo, Texas

J. E. CUNNINGHAM, *President*

UPON completion of a new power plant near Amarillo, Texas, in June, 1960, our electric system will have a capability of 925,000 kilowatts. This plant was originally scheduled for completion in 1961, and we found it necessary to accelerate construction so as to complete this plant before our 1960 peak load which occurs in the summertime. An additional 112,500-kilowatt unit has been ordered for installation in this new plant, and upon completion of installation our system will have a capability in excess of 1,000,000 kilowatts. By comparison, our system capability in 1950 was 312,450 kilowatts. During the five-year period 1960-1964, inclusive, our construction expenditures are estimated at approximately $100,000,000.

Our construction plans are designed to keep pace with the development of the 45,000 square mile area in which we operate. Our increases in load are coming from all revenue classes. We enjoy fine cooperation from electrical appliance dealers in our service area who are co-operating in aggressive appliance sales promotion programs. Our 1960 program calls for continued efforts in all fields—residential, rural, commercial and industrial—to keep up the growth record which we have established over the past years.

Tampa Electric Company

Tampa, Florida

WILLIAM C. MACINNES, *President*

THE year 1959 was a very eventful one for Tampa Electric Company. During this year we reached record highs in operating revenues, kilowatt-hour sales, addition of new customers and laid the groundwork for the biggest decade of growth in our sixty-year history.

Perhaps the most notable development—the one that will have the greatest direct bearing on the future operation of our company—was the formation with Virginia-Carolina Chemical Company and Peabody Coal Company of two shipping lines. These firms, Gulfcoast Transit Company and Mid-South Towing Company, are now in full operation. Their primary purpose is to haul coal for our Gannon station and return phosphate to the New Orleans area. Through this arrangement, and a similar two-way phosphate-coal haul by rail, we are now receiving coal at less than 30 cents per million Btu.

Tampa Electric has hitched its wagon to coal's star. Our Gannon plant is already generating some two-thirds of our power requirements, and this percentage will increase when our third Gannon unit comes on line in October of this year. This unit will be a 175,000-kilowatt unit. The two units now in operation are 130,000 kilowatts each. Also, we have just recently asked for bids on a fourth Gannon unit—another 175,000—which is planned for operation by late 1963.

Plans to construct a 50,000-kilowatt prototype nuclear power plant in this area in conjunction with Florida Power Corporation, as the Florida West Coast Nuclear Group, and the East Central Nuclear Group, are still in the research and development stage.

For a number of years now, we have actively advertised and promoted the heat pump, and last fall we began active promotion of resistance-type electric heating systems. Already we are certifying a larger percentage of Gold than Bronze Medallion homes in our service area, and we sincerely expect in a short time to see non-all-electric homes a rarity in the territory served by Tampa Electric.

The Tucson Gas, Electric Light and Power Company

Tucson, Arizona

C. E. HOCKINGS, *Vice President*

THE Tucson area continued its explosive rate of growth throughout 1959. A few company statistics compared with 1958 will serve to emphasize the substantial community growth which has continued at an accelerated rate for the past thirteen years.

	1959 % increase above 1958
Electric Operating Revenue	17.8
Gas Operating Revenue	6.7
Total Operating Revenue	14.3
Kilowatt-hour Sales	22.7
Electric Customers	7.1
Gas Customers	8.9
Kilowatts—System Demand ...	19.9
Net Plant and Property	14.7
Taxes Paid	18.8
Depreciation	18.7

Community construction activity is expected to continue at an accelerated rate for commercial and industrial buildings, residential subdivisions, shopping centers, motor hotels, schools and hospital facilities. It is estimated that the area population increased over 18,000 during 1959 and a similar increase is expected during 1960. Area population is now estimated to exceed 250,000. Extensive annexations were made to the city of Tucson in early 1959 and again in early 1960. As a result, it is estimated that the 1960 census will reflect a city population in excess of 200,000. A comparison with the 1950 city census—45,454—an increase of well over four times in ten years—serves to indicate growth problems expected to continue indefinitely.

Net plant and property has increased from $17.5 million in 1949 to $74.3 millions in 1959. This 4.3 times increase in ten years has created many problems during our "growing up" period. This "growing up" is forcefully demonstrated by the following tabulation of local steam generation facilities:

Year	*Kilowatt Additions*	Total Kilowatts	*No. of times 1949 Total*
1948		6,150	
1949	29,250 (2 units)	35,400	
1953	25,500	60,900	1.7
1954	51,280	112,180	3.2
1958	81,000	193,180	5.5
1960	81,000 (summer)	274,180	7.7
1962	100,000 (projected)	374,180	10.6

(*Continued on page* 98)

Substantial industrial loads are to be connected in 1960 and 1961 and combined activities of the Applied Research Laboratories of the University of Arizona at Tucson, and Tucson industrial promotion groups will undoubtedly contribute substantially to future industrial load increases, thereby augmenting commercial and residential needs.

The company has recently completed the drilling and development of an experimental deep water well which is of inestimable value in the orderly planning and placing of its additional generating facilities.

Heretofore, water supplies have been extracted from a maximum depth of approximately 800 feet. The new well was drilled to a depth of 2,500 feet, and revealed exceptionally good water bearing strata at many of the deeper levels. When cased, the top 1,000 feet was left unperforated in order that the pumping of this well would not extract water from the upper strata. Extensive pumping tests have proved that the company has developed a deep water supply which is much better than had been expected. The successful completion of the well gives assurance of an adequate water supply for future generating units at the company's Irvington plant site, and also indicates that the reserve supply of water available for domestic and commercial use in the area is much larger than had been previously estimated.

Union Electric Company

St. Louis, Missouri

J. W. McAfee, *President*

One of our industry's most persistent problems arises out of most people's understandable habit of sleeping at night, instead of during the day. Sleeping people use very little electricity. As long as they continue in this habit we will be seeking ways to realize a return from plant and equipment that now figuratively sleeps while people do but actually needs no rest.

Our company took an important step to mitigate this economic loss when we decided, subject to regulatory authority, to build the nation's largest pumped storage plant. The Taum Sauk project, scheduled for completion in 1963, will use up to 400,000 kilowatts of otherwise idle plant. This is about half of the steam plant that will be available during the expected average night load valleys in 1963.

The water pumped up into the storage reservoir at night will be released by day to run two generators totalling 350,000 kilowatts. We will get back by day two valuable peaking kilowatt-hours for each three used for pumping at night.

A consideration that weighed heavily in the decision to build Taum Sauk was the saving in capital outlay. It will cost $50 million. A steam plant to give us the same increase in peak capability would cost $80 million.

While of little value for other purposes, the Taum Sauk area is excellent as a pumped storage plant site. Located 100 miles south of St. Louis in the Ozark Mountains, it will give us an 800 foot head between reservoirs only 6,846 feet apart. The granite that underlies the site's thin soil will provide a solid floor for the upper reservoir and firm walls for the conduit connecting the two pools.

An important difference between Taum Sauk and a steam plant is the longer expected service life of Taum Sauk, seventy years versus forty years for steam, and its consequently lower depreciation expense. Furthermore, the pumped storage plant is simpler to operate than a coal fired steam plant and consequently can be highly automatized, all resulting in savings in operating manpower. While typical of hydro plants generally, maintenance costs are significantly lower than for steam equipment which must work at high temperature and speeds.

Taum Sauk offered additional benefits, some not easily evaluated though nonetheless real: (1) because pumped storage power is quickly available, steam plant spinning reserve could be reduced, with resultant fuel savings; (2) pumping would smooth out the load on system steam plants, resulting in better operation; (3) by permitting deferral of a steam unit for two years or more a better unit would be available since large steam generating equipment is steadily being improved.

Projecting the step by step cost comparison as far into the future as reliable estimating permitted, brought convincing evidence that Taum Sauk could be integrated into system operations with substantial resultant overall economic advantage.

Taum Sauk is, in a sense, a break with traditional concepts in American power production. At the same time it is in keeping with our industry's traditional open-minded willingness to explore new ways of doing our job more economically. It has much in common with our research into nuclear power production methods and into magneto hydrodynamics. We are confident that each will, in time, play a part in maintaining our record of keeping the forces of inflation in check.

The United Illuminating Company

New Haven, Connecticut

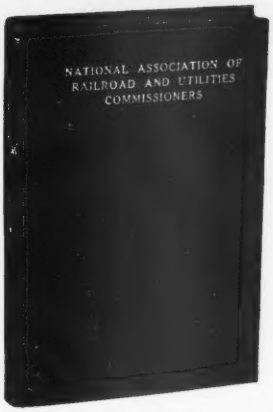
William J. Cooper, *President*

Entering it sixty first year, The United Illuminating Company expects to spend approximately $21 million for new construction in 1960 to supply the future electricity load growth in the metropolitan areas of New Haven and Bridgeport. The largest outlay for new plant in any year of the company's history, the construction budget is part of a three-year expansion program that will cost $50 million by the end of 1961.

Over $12.5 million of this year's expenditures will go toward the 160,000-kilowatt generating addition that is under construction at UI's Bridgeport harbor station (scheduled to go into commercial operation in 1961).

Major extensions to UI's transmission facilities will take up an additional $3.5 million. An underground, pipe-type 115,000-volt cable which will be two-and-one-half miles long, is presently being constructed in the New Haven area. At the western section of the transmission system, construction of a four-mile extension part of which requires submarine construction at Bridgeport Harbor, will start early this summer. Supplementing the existing line between New Haven and Bridgeport, these transmission connections will provide a second way of moving power from one major load center to the other and, in effect, will increase the New Haven area's generating capacity. UI's new construction program also

(*Continued on page* 101)



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calls for the addition of new distribution substations and expansion of existing substations in the fast growing load areas.

In 1960, UI expects the volume of kilowatt-hour sales to increase in the residential, commercial and industrial markets. The company which does not merchandise appliances, has further intensified its sales programs to develop higher electricity sales. Introduction of an electric home heating rate has opened a new and promising market for building up sales volume, and UI is concentrating its home heating sales efforts in the new housing field. In addition to off-peak water heating, the company this year is promoting the new, 40-gallon "quick recovery" water heater. Sales campaigns will also include such load-builders as electric ranges, dehumidifiers, clothes dryers, etc.

Urban renewal and redevelopment is exerting positive, far reaching effects on the continued growth and well-being of economic life in UI's service area. With one renewal project nearly completed, New Haven is moving ahead with other projects aimed at revitalizing the heart of the city. Bridgeport's renewal plans have progressed another step with the approval of federal aid for clearing certain blighted areas in that highly-industrialized city. The Connecticut Turnpike, with its opening of more land for industrial development, is also stimulating business growth in the company's service area. As a result of its enthusiastic participation in urban renewal and redevelopment, UI has been honored by an invitation to compete in the Edison Electric Institute's annual Edison Award.

Upper Peninsula Power Company

Houghton, Michigan

JOHN H. WARDEN, *President*

THE Upper Peninsula Power Company electric sales during 1959 increased 10 per cent over the previous year and the peak demand on the integrated system was 15 per cent greater than the year before, in spite of the prolonged steel strike which shut down the iron mining industry for 116 days. The average annual use per residential customer in 1959 was 3,740 kilowatt-hours, an increase of 137 kilowatt-hours over 1958 which is 3.8 per cent over the national average annual use of 3,577 kilowatt-hours; however, to accelerate the use of electricity within the company area, the sales department was expanded and emphasis is being placed on increasing electric sales in all classifications.

The John H. Warden station was placed in commercial operation, and is supplying the adjacent new Celotex Corporation Fiberboard plant with its steam and electric requirements, as well as providing additional power for the expanding needs of the company. A 35 mile transmission line connects this plant to the load center in the company's western division.

This year's construction program includes additions to substations and various line construction.

A major rupture of the thirty-year-old wood stave pipeline at the Victoria hydro plant occurred during the winter and was repaired. The pipeline which is 6,050 feet long and 10 feet in diameter was completely rebuilt during the fall of 1959.

In connection with its two hydro plants and several water storage basins, the company has some 50,000 acres of watershed land which is being managed by a land and forestry department. A timber harvesting program based on sustained yield, with the annual planting of seedlings on barren areas and a hunting camp-cottage lease program and farm lease programs assures "multiple use" of the company's lands to the benefit of the company, sportsmen, recreationists, and forest industries. The company has three registered foresters on its payroll.

The bimonthly billing program was established in all seven company districts during the year.

Virginia Electric and Power Company

Richmond, Virginia

A. H. MCDOWELL, JR., *President*

FAVORABLE progress and growth were experienced in 1959 by Virginia Electric and Power Company. Operating revenues, the balance for common stock and surplus and per share earnings reached an all time high.

The company serves 743,000 electric customers in a 32,000 square mile area in Virginia, North Carolina and West Virginia. The company also serves 97,000 gas customers in the Hampton Roads area of Virginia.

Construction expenditures in 1959 were $47,016,000 and in 1960 the demands of our customers call for an estimated expenditure of $58.6 million. The new 170,000-kilowatt generating unit at Portsmouth power station was completed in 1959. This Portsmouth addition together with work on other generating facilities, including a similar sized unit at the Chesterfield power station (1960) and 200,000 kilowatt additions at both Possum Point and Portsmouth power stations (1962) accounted for $19.4 million of 1959 expenditures. Electric distribution facilities required $21 million and $2.3 million went into electric transmission lines. Gas and other property additions totaled $4,316,000. In 1960 continuing work on new generating facilities will require $21.8 million and $30.3 million will be spent on transmission and distribution facilities. Also, $6.5 million will go for gas and other property additions.

On March 25, 1960 the Federal Power Commission granted the company a license to build a 200,000-kilowatt hydro power station on the Roanoke river near Gaston, North Carolina. Construction of this project, estimated to cost $50 million already has started. It is expected to be completed in the spring of 1963.

The company has 21 generating plants with a total generating capability of nearly 1.9 million kilowatts. When the generating stations now under construction are completed, total capability will be increased to about 2,670,000 kilowatts, an increase of over 40 per cent in only four years over present capability.

The proposed experimental nuclear power project, which the company in association with three neighboring utilities is constructing, progressed on schedule in 1959. The necessary research and development work is proceeding and a permanent laboratory and weather tower have been erected at the Parr, South Carolina site. The station will provide research and engineering experience for practical uses of atomic energy in electric generation.

(*Continued on page* 102)

The Washington Water Power Company

Spokane, Washington

KINSEY M. ROBINSON, *President*

GROWTH again characterized the revenues, number of customers and physical properties of the Washington Water Power Company in the year 1959, according to the company's annual report. Earnings for 1959 were the best in the history of the company.

Expenditures for all phases of the company's 1959 construction program totaled $23,321,074 bringing the total for the past decade to $196,707,202. The completion of the Noxon Rapids dam and powerhouse, along with the installation of the first three 100,000-kilowatt generators, accounted for $13,830,855 of the expenditures in 1959.

The years 1950 through 1959 may well be termed the "decade of decision" for the Washington Water Power Company. During this period, the company attained independent status (1952) and since that date has more than doubled the number of its shareholders. It constructed two huge hydroelectric plants, Cabinet Gorge and Noxon Rapids, thereby adding 600,000 kilowatts to its generating capability.

WWP's total utility plant in service at year end, 1949, aggregated $75,657,281. Ten years later on December 31, 1959, the total utility plant in service has climbed to $266,082,197—a net gain of approximately $190,400,000. Ten years ago residential customers were using an average of 5,138 kilowatt-hours annually. As 1959 came to an end, residential customers were using 8,740 kilowatt-hours annually. The increase per residential customer for 1959 alone was 526 kilowatt-hours.

The five divisions of the Washington Water Power Company cover approximately 26,000 square miles of the fast-growing Inland Empire. At the end of 1959, the company was providing electric service to 147,000 electric customers (an increase of 34 per cent since 1949) and delivering natural gas to another 17,151 customers. Development of the area's natural resources and other industrial progress promise continued rapid growth.

West Penn Power Company

Greensburg, Pennsylvania

S. L. DRUMM, *President*

WEST Penn Power Company's area development program is part of an overall co-ordinated program of the West Penn Electric System of which The West Penn Electric Company is the parent organization.

In addition to extensive expansion in many present industries, West Penn Power's area development activities in 1959 were successful in helping to attract 34 new industries and expansion projects which went into operation in the company's territory during the year. The estimated new plant investment is $50 million with initial employment of 2,100 and potential employment of about 4,700. In addition, 31 projects with initial employment estimated at 2,900 either started construction, or purchased or optioned sites for possible further action in 1960.

But this industrial development progress reflects only part of the broad activities of the co-ordinated System program. The objective of the program is to accelerate and stimulate the economy of the System's service area, both short and long range, so that greater sales opportunities will result in all the System's markets. To meet this objective the approach includes not only the "smoke-stack-chasing" aspects of industrial development but is also heavily weighted with activities in community betterment, recreation and resort development, planning and redevelopment for public improvement, and conservation.

The program embraces all aspects of community life. By challenging the community a company's efforts are multiplied through the interest and support of the residents of the community. Individual community goals are established but are made as realistic as possible by recognizing the resources of the community.

On this basis, then, here are some of the broader results of West Penn Power's 1959 area development activities:

1. A number of new local community area development organizations were formed including 29 Planning Commissions and 9 Industrial Development Corporations.
2. West Penn communities won 15 awards, or 43 per cent of the total, in the Pennsylvania State Chamber of Commerce Community Development Contest.
3. Twenty communities undertook the preparation of comprehensive plans for community growth. Two such plans, initiated earlier, were completed.
4. Significant progress was made in promoting conservation, tourist travel, and area vacations. One example is the increasing recognition of Laurel Highlands, a mountainous, scenic, and historical area in the company's territory, as a vacation and tourist attraction.
5. To meet the need for readily available industrial plant space, a program for the erection of industrial shell buildings by community organizations was instituted. The erection of the first such building is scheduled for 1960.

There is no question about the value of such a comprehensive area development program. An electric utility virtually has no choice except to promote the territory which it serves. How effective such promotion is will determine, to a significant degree, the long term growth of the utility itself.

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Western Light & Telephone Company, Inc.

Great Bend, Kansas

E. P. HENNEK, *President*

1959 was a year of growth and progress for Western Light & Telephone Company, Inc. with an 8.6 per cent increase in gross operating revenue over the previous year. A net income of $2,020,000 and earnings per common share of $3.21 were the highest in the company's history.

WL&T's general construction budget for the electric, gas and water properties in 1960 is $2,200,000. This figure includes appropriations for building 50 miles of 115 kilovolt transmission line from Smith Center to Jamestown, Kansas.

Conversion to dial in eight telephone properties represents a large share of our expansion and modernization plans for 1960. Plans call for dial conversion in Lenox and Charter Oak, Iowa; LaGrange, Houston, Seymour, Ewing and Monticello, Missouri; St. John, Kansas during 1960. The telephone construction budget in Iowa, Kansas and Missouri is $1,070,000.

Western Massachusetts Electric Company

Greenfield, Massachusetts

HOWARD J. CADWELL, *President*

Two years ago we came to the conclusion that the growth of our company's sales left much to be desired. We found that the growth in the number of electric users tended to obscure an adverse trend in the growth-rate of use-per-customer. We decided that this was due in part to increasing competition, and in part to our failure to develop new markets for our product. This led us to a re-study of the economics of electric space heating as applied to residential and commercial (even industrial) markets.

In the last two years we have designed and filed rates for electric space heating for the several classes of customers, have launched an all-out bid for this business, and now have on our lines several hundred installations.

At the same time, we are very conscious of the load-factor implications of electric space heating in colder climates and have expended considerable time and money in what might be called "applied research" in the field of off-peak heat storage. We have on our lines several installations employing hot water accumulators—both by themselves and in association with heat pumps. We are quite encouraged as to the economic feasibility of heat storage, particularly in large commercial buildings, under the climate conditions which prevail in New England. Out of some 13 accumulator installations, the two most interesting are these:

(1) A 40,000 square foot, all electric, rental office building in which a 15,000-gallon storage tank is resistance heated on an entirely off-peak basis. The cooling cycle does not operate entirely off-peak, but the chiller is sized at about half that capacity which would otherwise have been necessary for uncontrolled cooling of the building. An alternative design to permit ice-making in the storage tank should take the cooling (like the heating) entirely off-peak. Customer satisfaction is high, and cost of operation at a fully compensatory electric rate is only about 20 per cent above No. 4 or 5 fuel oil. The differential in fuel cost is more than offset by the well-known advantages of electric heating—controllability, comfort, cleanliness and reductions in operating and maintenance labor.

(2) In the company's own new headquarters office building an 8,000-gallon accumulator is being used in association with a 130 h.p. heat pump. The heat pump system is intentially down-sized to that capacity which is sufficient to cool the building in summer. This yields a very high year-round load factor for the heat pump. Stored hot water, heated entirely off-peak, supplements the heat pumps during cold weather. Performance can best be summarized by noting that the maximum load experienced during the hours 8 a.m. to 9 p.m. for heating this 73,000 square foot building, during a week which experienced sustained 10° F. temperatures, was about 100 kilowatts—or 1,400 watts per 1,000 square feet. Off-peak loads were more than twice this amount.

It is our basic philosophy to promote electric space heating in *all* its variations, but to so design our rates as to (a) encourage improved load factor through use of equipment such as that described above, and (b) discourage thermostat set-back at night. Rather than to incorporate in our space-heating rates any demand charges (which act as psychological barriers to the sale of electric space heating), it is our practice to price the kilowatt-hours on a day-night basis, with an appropriate spread in favor of off-peak use.

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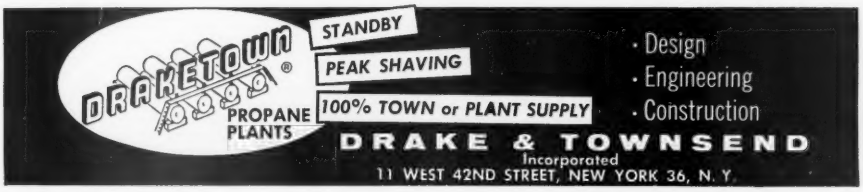

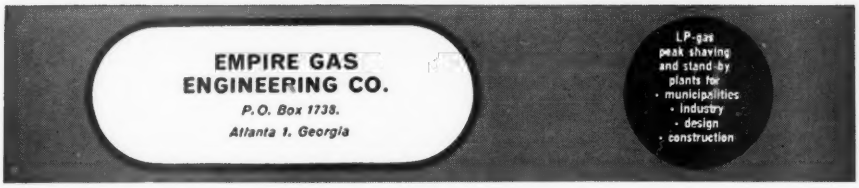

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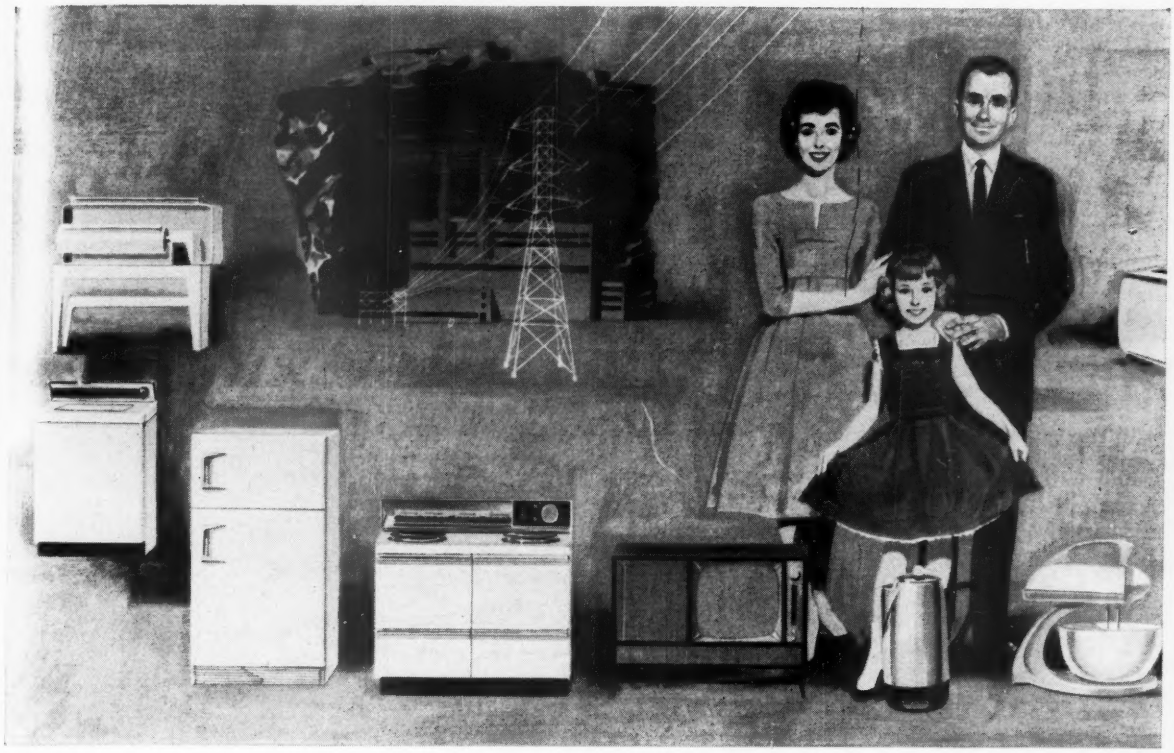

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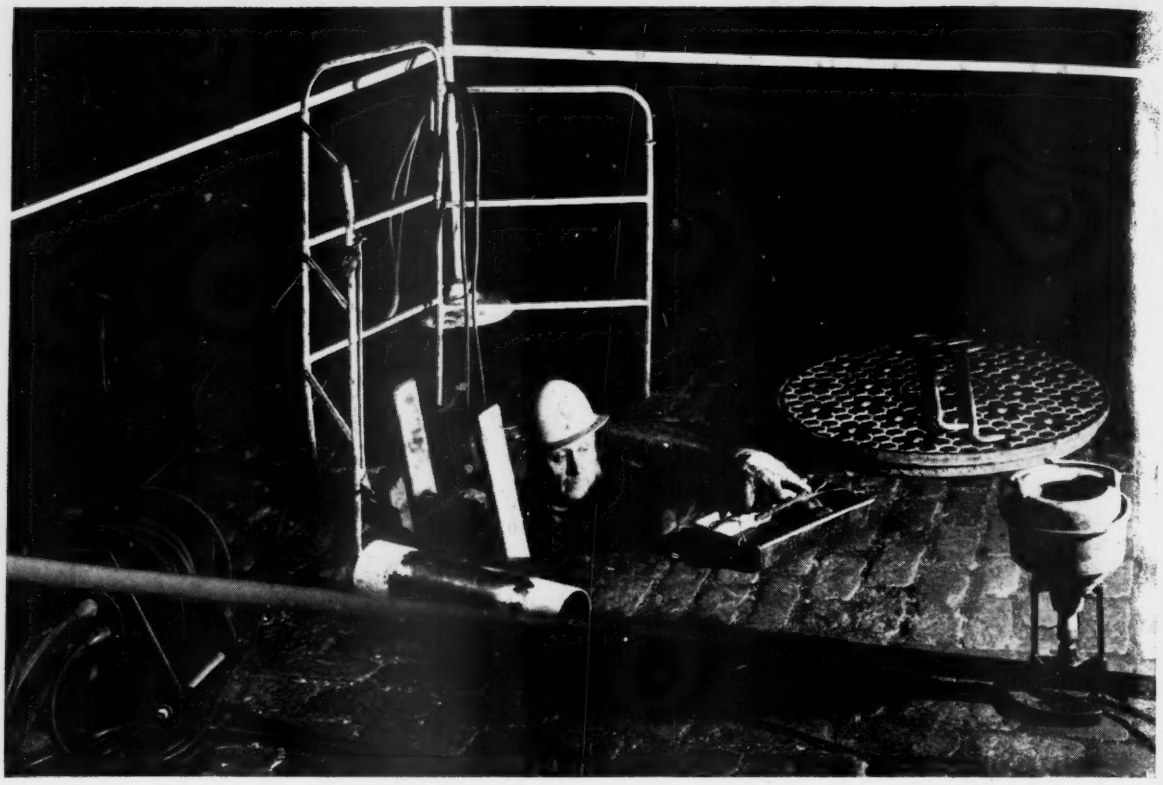

Where Will You Get New Capital For The **POWER-HUNGRY '60's?**

The privately owned electric utility industry plans to spend $3.5 billion on new and improved facilities in 1960. And over the next five years it expects to spend nearly 15% more on expansion than it has in the past five.

Vast new capital funds will be required. They will come from the individual and institutional investors who are the substance of American free enterprise.

As a vital, creative link between the electric utility industry and money sources, Kidder, Peabody has long experience and leadership in raising debt and equity funds through private placements and underwritings.

Last year, Kidder, Peabody & Co. and Kidder, Peabody & Co. Incorporated took an active part in the underwriting, sale and distribution to the public of 62 new utility issues amounting to more than $1,518,000,000.*

Our 26 offices coast-to-coast have the extensive contacts and facilities needed to achieve a prompt, economical distribution of new issues. Our experience and long-established connections with private and institutional investors bring us, every year, large quantities of private placement business. Call us for detailed information on how we could help your company meet its requirements for additional capital in the powerful decade ahead.

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*A partial listing of recent issues

Alabama Power Company
Brockton Edison Company
Carolina Power & Light Company
Central Hudson Gas & Electric Corporation
Central Louisiana Electric Company, Inc.
Community Public Service Company
Delaware Power & Light Company
Fall River Electric Light Company
Florida Power Corporation
Florida Power & Light Company
Georgia Power Company
Idaho Power Company
Interstate Power Company
Kansas Gas & Electric Company
Louisiana Power & Light Company
Maine Public Service Company
New York State Electric & Gas Corporation
Pacific Power & Light Company
Pennsylvania Electric Company
Public Service Company of New Hampshire
South Carolina Electric & Gas Company
Southern Nevada Power Company
Tampa Electric Company
Texas Power & Light Company
Upper Peninsula Power Company
Washington Water Power Company
Wisconsin Power & Light Company